INDEX.

List of sub-headings :—AUTHORS, CITY NOTES, CONTRACTS CLOSED AND OPEN, CORRESPONDENCE, LEGAL, LIGHTING AND POWER NOTES, NEW COMPANIES, NEW ELECTRICAL DEVICES, FITTINGS AND PLANT, OBITUARY, OFFICIAL RETURNS, PARLIAMENTARY, PROCEEDINGS OF SOCIETIES AND INSTITUTIONS, PROSPECTUSES, RAILWAY NOTES, REVIEWS, TELEGRAPH NOTES, TELEPHONE NOTES, TRAMWAY NOTES.

ABATEMENT, Smoke, by Dr. L. Lessing, 593
Absorption of wireless radiations, 122
Accident, Railway, 754
„ The Aisgill railway, 426, 443, 478
Accidents, 83, 145, 267, 306, 465, 505
„ in Mines, Electrical, 732, 813, 816
„ in 1912, Electrical, 13, 74, 116
„ The Diesel, 770
Accounts, Consumers' Hire, by "Interested," 690
Accrington Electricity Works, Gas-electric and by-products recovery plant at the, 242, 259
„ The National gas engines at, 316
Accumulator plates, Porous, 834
„ The Fuller block, 357
„ Traction on Prussian railways, 200
Acid-proof material, An, 1,039
Adjustable speed alternating-current motors for printing press works, 819
Advertisements and the law of defamation, 394
Advertising, Central station, 242, 356
A.E.G., The activity of the Berlin, 193
Aerial cableway in the world, The largest, 881
Aeroplane, Transmission lines patrolled by, 922
Agreement, Engineers and National, 266
Agreements, Labour, 241
Agricultural research, 778
Agriculture and life, Application of electricity to, 1,015
„ Electricity in, 518
Air-break switchgear, Outdoor, by W A. Coates, 1,043
Air filter plants for electric generators, 514
Aisgill disaster, The case of Driver Caudle, 688
„ railway accident, The, 403, 426, 443, 478, 505, 855
„ reflections, 11, 556
Aluminium, and duralumin, Exposure tests of copper, Commercial, by E. Wilson, 489
„ cables for mining work, Copper and, by Burkewood Welbourn, 117
„ in France, 571
„ insulation for magnet coils, 924
„ market, The, 653
„ works, New, 532
Amalgamation, A Spanish, 532
American electrical developments at the Cauvery Falls, India, 186
„ exports of electrical goods, 313
„ factories in Canada, 458
„ methods: An indictment, by "F. W. D.," 856
„ methods are not suitable for British conditions, by A. Hugh Seabrook, 805
„ Patent Law, 193
„ practice, The electric truck, English experiments and, 539
„ railway electrification, 345
Anæsthesia, Electrical, 187
Anglo-American Exposition, 1914, The, 517, 922
Antipodean views, 634
Aphegraphe: An electrical instrument for use in graphical mathematics, The, 484
Apparatus on hire, by T. C. Parsons, 436, 474, 512
Appointments vacant, 23, 67, 105, 145, 186, 226, 345, 387, 428, 465, 505, 546, 585, 618, 667, 711, 754, 796, 835, 882, 924, 967, 1,005, 1,041
Arbitrary specification, An, 163
Arbitrators, Municipal officers as, 1,026
Arc and spark wireless systems, 631
„ as a standard of light, The electric, by J. F. Forrest, 678
„ lighting and high-pressure gas for street lighting, 598
Architect and the electrician, The, 562
Argentine, Lamp works in the, 611
„ Republic electric imports, 1,035
Armature, The "hand" of an, by Humphry MacCallum, 477
Association of Electrical (Station) Engineers, 267, 345, 465, 545, 584, 668, 711, 754
„ of Mining Electrical Engineers, 754
„ The Staff Engineers, 939
Atmospheric conditions on the strength of wireless signals received at Liverpool, Effect of, by Prof. E. W. Marchant, 632
Atmospheric nitrogen, The extraction of, 157
„ refraction and absorption in wireless telegraphy, by W. H. Eccles, 633
Attack on a sub-station, 882
Auckland Harbour, Electrical equipment at, 1,022
Australia and of an Australian visiting Europe, A resumé of the impressions of an Englishman visiting, 634
„ Car-building in, 459
„ Electrical competition in, 909
„ Trade statistics of, 932
Australian electric heating apparatus, 313
„ electrical trade, 910
„ electrical store, An, 680
„ Electricians' wages, 881
„ Insulators made in, 1,006
„ labour conditions, 1,006
„ trade, 602, 731, 910
„ wireless stations, 386
Austria, Depression in, 533
„ Lamp making in, 496, 611, 751
Austrian cable manufacture, 416
AUTHORS—
Alabaster, W. H., on Electric cooking, 451
Anderson, J. S., on A new method of starting mercury-vapour apparatus, 632; on A new method of sealing electrical conductors through glass, 633
Austin, E. P., on Lighting, 284
"A. W. B.," on Electricity supply charges, 197
"Axon," on Working under a non-technical general manager, 165
Barham, G. Basil, on Notes on Buying, 276; on Catalogues and process blocks, 325
Beauchamp, J. W., on The electric vehicle, 236
Booth, W. H., on Workshop flooring, 397
Bousfield, A. J., on Tramway curves, II., 405; on Corrosion on tramway poles and its arrest, 676
Brewerton, A. E., on Works shop order systems, 1,058
Chattock, R. A., on Co-operative control of electric supply undertakings, 1,017
Coates, W. A., on Distribution system in Hamilton, Canada, 45; on Out-door air-break switchgear, 1,043
Cooper, W. R., on Short heat tests of electrical machines, 633
"Cynicus" on Municipal high finance, 124
D'Albe, E. E. Fournier, on The minimum quantity of light discoverable by means of selenium, 489
Dary, Georges, on The production of nitrates by the direct electrolysis of heat deposits, 1,020
Duddell, W., on Pressure rises, 892, 978
Eccles, W. H., on Contacts between electrical conductors, 595; on Atmospheric refraction and absorption in wireless telegraphy, 633
Edgcumbe, Kenelm, on Some notes on graphic instruments, 649
"Element" on Notes for installation inspectors, 33
Evershed, S., on The characteristics of insulation resistance, 894, 934, 981
Faraday Proctor, H., Address, I.E.E. Western Local Section, 696
Fearnley, A. R., Presidential address, The Municipal Tramways Conference, 553
Fenton, Councillor W. C., Sheffield, on The maintenance of paving on tramway track as affected by Sec. 28 of the Tramways Act, 1870, 555
Fleck, A., on The chemistry of the radio-elements, 633
Flint, Ald., on The advantages and disadvantages of platform fare collection, 554
Frick, Otto, on The electric refining of steel in an induction furnace, 411
"F. W. D." on American methods: An indictment, 856
Gavey, Sir John, on Sir William Preece, 789
Gerard, Andre, on The causes of fires in central electric lighting stations and their remedy, 75
Girling, H. P., on Small electric light and power undertakings, 963
Hamilton, J. B., on Urban passenger transport, 595
Harriss, G. Marshall, Address to Dublin Local Section, I.E.E., 849
AUTHORS—*continued.*
Hering, Dr. Carl, on Demonstrations of the Hering "pinch effect" electric furnace, 79
Hevesy, G., on Radio-elements as indicators in chemistry and physics, 679
Hodgson, E. S., on The electrical work at the Physikalische-Technische Reichsanstalt, Charlottenburg, in 1913, 356
Holden, S. H., on The British standard specification for consumers' electric supply meters, 810
Hopkinson, Prof. Bertram, on A new method of cooling gas engines, 172
Howe, Prof. G. W. O., on The nature of the electromagnetic waves employed in radio-telegraphy, and the mode of their propagation, 486
"Ignotus," on The Chief who had a brain wave, 767
"Interested," on Outside shop lighting on the hire system, 33; on Consumers' hire accounts, 690
Jackson, J. W., on Steam boiler working in electrical power stations, 779
Joyce, Percy, on British trade with Canada, 143
Kapp, Prof. Gisbert, on Main-line electric traction, 448
Kershaw, J. B. C., on The Billiter-Siemens electrolytic alkali cell and process, 273; on Trade Unions and co-partnership, 632
Kinnes, A., C. C. Paterson, and E. H. Rayner, on The use of the electrostatic system for the measurement of power, 125
Klingenberg, Prof. G., on The electricity supply of large cities, 1,060
Lanchester, F. W., on The internal-combustion engine applied to railway locomotion, 451
Lewin, Arnold, on Tragic end of two aspirants to electrical knowledge, 1,019
MacCallum, H., on The "hand" of an armature, 477; on "Zig-zag" winding diagrams, 1,047
Marchant, Prof. E. W., on Effect of atmospheric conditions on the strength of wireless signals received at Liverpool, 632; Address to Manchester Local Section, I.E.E., 764
Martin, Douglas Sutherland, on Future progress in the development of the electric vehicle business in America, 45, 85; on Monopoly v. co-operation, conservation v. waste, 314
Mavor, H. A., and John Reid, on Electric marine propulsion, 79
Mitchell, R. J., and W. H. L. Watson, on Electric automobiles (The I.M.E.A. Convention, 1913), 36
Moores, G., on The winding diagram in the works, 844
Morris, Prof. J. T., on Domestic electric cooking and heating, 528
Murdock, W. H. F., on A magnetic susceptibility meter, 633
Myers, W. H., on Wind-power for the generation of electrical energy, 210
Neale, R. E., on The Powell saccharine process for seasoning and preserving timber, 444
Nussbaum, G. A., on Reminiscences of the misty past, 636
Offor, Geo., on The future of municipal enterprise, 1,018
Parsons, T. C., on Apparatus on hire, 436, 474, 512
Paterson, C. C., E. H. Rayner, and A. Kinnes, on The use of the electrostatic system for the measurement of power, 125
Perry, H. H., on A two-rate system without time-operated control, 891
Powell, S. M., on Increasing frequency by static transformers, 323
Rayner, E. H., A. Kinnes, and C. C. Paterson, on The use of the electrostatic system for the measurement of power, 125
Reid, John, and H. A. Mavor, on Electric marine propulsion, 79
Robertson, J. A., Address to Scottish Local Section, I.E.E., 848
Rye, A. N., on Water supply for internal-combustion engines, 164
Seabrook, A. Hugh, on American methods are not suitable for British conditions, 805
Shaw, Dr. P. E., on An electrical measuring machine, 127
AUTHORS—*continued.*
Soddy, F., on The radio-elements and the periodic law, 632
Spencer-Phillips, R. J., on electricity as a by-product, 845
Stansfield, Prof. H., on The sensitiveness of the human skin as a detector of low-voltage alternating E.M.F., 595
Steinmetz, Chas. P., on Energy density, 196
Thornton, Prof. W. M., on The inflammability of coal dust in air, 679
Turnbull, C., on Pressure regulation, 364
Vernier, C., Address, I.E.E., Newcastle Local Section, 693
Watson, W. H. L., and R. J. Mitchell, on Electric automobiles, 36
Webb, C. J., on The electrical exhibits at the Olympia Motor-car Exhibition, 771, 846, 889, 900, 944
Welbourn, Burkewood, on Copper and aluminium cables for mining work, 117
"W. E. H.," on Cable laying records, 111; on Sub-stations, 677
"Whistlefield," on Effective window lighting, 975
Wilkins, S. Wallace, on The art of travelling, 805
Wilson, E., on Exposure tests of copper, commercial aluminium, and duralumin, 489
Woodhouse, W. B., Address, I.E.E., Yorkshire Local Section, 809
"X. Y. Z.," on Meter constants, 422
Automatic staircase lighting control, Improved, 288
Automobiles, Electric, by W. H. L. Watson and R. J. Mitchell, 36

BALKAN States, Trade prospects in the, 132
„ war and Austria's electrical trade, The, 131
Ball, Midland Electrical Engineers', 712
Baltic, Submarine power transmission in the, 61
Bankruptcy proceedings, 16, 53, 99, 132, 175, 213, 253, 293, 334, 374, 416, 458, 497, 532, 571, 611, 654, 699, 712, 741, 782, 825, 865, 882, 910, 953, 999, 1,035
Barcelona Exhibition, 313
Baths at Ilford, Electric, 459
„ Electrolysed sea-water for public, 4
Battery cars, Railway, 531
„ litigation in the United States, Storage, 66
„ The Edison, 496
Batti-Wallahs' Society, The, 545
Bauxite, The electric treatment of, 804
B.E.A.M.A., 1,041
Bedford L.G.B. inquiry, The, 32
Belgian patent action, A, 144
Benevolent Institution, Electrical Trades, 834
Billiter-Siemens electrolytic alkali cell and process, The, by J. B. C. Kershaw, 273
Black gang in Turkey, The, 175
Blasting, Electric mine, 472
„ on the Rand, Electric, 921
Block accumulator, The Fuller, 357
Boiler tubes, Ironising, 415
„ working in electrical power stations, Steam, by J. W. Jackson, 779, 853, 890
Boiling carbon, 1,006
Bonus systems of wages payment, Piecework and, by "Zahler," 204
Bradford Engineering Society, 794
„ Plant extensions at, 167
Bray explosion, The, 482, 528
Brazil, Calcium carbide in, 334
Brazilian patents, 953
Brighton hotel kitchen, A, 792
British Association, The, 143, 428, 447, 484, 523, 561, 593, 632, 678, 726
„ conditions, American methods are not suitable for, 805
„ Electric Transformer Co's works, 876
„ Engineers' Association, 826
„ inspection for the American underwriters, 63
B.T.H. Operatic Society, 1,005
Buildings and their straightening, Leaning, 689
'Buses: Transmission strains and operating costs, Petrol-electric, 249
Buying, Notes on, by G. Basil Barham, 276
By-product, Electricity as a, by R. J. Spencer-Phillips, 845

264606

CABLE explosions, Electric, 924
,, factory, New, 47
,, laying and records, by "W. E. H.," 111
,, manufacture, Austrian, 416
,, manufacture in Germany, 132
Cables for mining work, Copper and aluminium, by Burkewood Welbourn, 117
Cableway in the world, The largest aerial, 881
Cadder colliery fire, 835
,, pit disaster, The, Home Office inquiry, 558
Calcium carbide in Brazil, 334
,, cyanamide statistics, 266
Callender's Cable Works Prize band, 825
Canada, 699, 782
,, American factories in, 458
,, British trade with, 44, 81, 114, 306, 640, 820, 977
,, British works in, 17
,, Lignite coal in, 558
,, Notes from, 48, 124, 199, 287, 479, 564, 766, 988
Canadian business tours, 825
,, companies consolidate, 16
,, electrical store, A, 825
,, electrical trade, 655, 688, 771
,, National Exhibition, Electrical exhibits at the, 570
,, outlook, The Vehicle charging load, A, 244
Cannock Chase colliery, Electrification of the, 318
Capital during construction, Payment of interest on and out of, 383
Car-building in Australia, 459
,, lighting dynamos, New French, 354
Carbon, Boiling, 1,006
Carels-Diesel Engine Works, The, 167
"Cascade" winders on the Rand, Variable speed, 992
Catalogues and process blocks, by G. B. Barham, 325
Catalonia, Electric undertakings and water-power in, 1,030
Cauvery Falls, India, American electrical developments at the, 186
Cawnpore, Mill lighting at, 459
Central station advertising, 242, 356
,, station fires in America, 922
,, stations, The prevention of fire in, 43, 75
Chambers of Commerce and income tax, 1,039
Characteristics of insulated resistance, The, 1,016
Charge engineer, Mrs. Williams: Woman, 545
Charges, Electricity supply, by "A. W. B.," 197
Charging Load: A Canadian outlook, The vehicle, 244
Cheese by electricity, Maturing, 4
Chemistry of the radio-elements, The, by A. Fleck, 633
Chester hydro-electric plant, The, 602, 619
Chicago, The Parsons' turbine for, 854
Chichester, Electrically-operated ice plant at, 652
Chief Engineer's Department of the L.C.C., 943
,, who had a brain wave, by "Ignotus," 767
Chiefs I have met, Some, 206
Chimney, Fall of a steel, 464
China, 823
,, German activity in, 293
Chinese contract, A, 363
Christmas and codicils, 986
Circuit-breakers, Troubles due to non-use of, 76
Cities, The electricity supply of large, by Prof. Klingenberg, 1,060

CITY NOTES—
Aberdeen Suburban Tramways Co., Ltd., 310, 389
Adelaide Electric Supply Co., Ltd., 884, 926, 971
Alldays and Onions Pneumatic Engineering Co., Ltd., 971
Allgemeine Elektrizitäts Gesellschaft, 715, 836
Amazon Telegraph Co., Ltd., 797, 838
Anderston Foundry Co., Ltd., 716
Anglo-American Telegraph Co., Ltd., 69, 627
,, -Argentine Tramways Co., Ltd., 627
,, -Bohemian Industry, Ltd., 230
,, -Portuguese Telephone Co., Ltd., 549
Argentina, 627, 628, 840
Aron Electricity Meter, Ltd., 26
Ascot District Gas & Electricity Co., Ltd., 389
Auckland Electric Tramways Co., Ltd., 586, 624
Australia, 671
Austrian works, 349, 1,012
Automatic Telephone Manufacturing Co., Ltd., 969
Avery, W. & T., 1,050
Babcock & Wilcox, Ltd., 550
Bahia Tramway, Light & Power Co., Ltd., 757
Barbadoes Electric Supply Corporation, Ltd., 885, 926
Barcelona Traction, Light & Power Co., Ltd., 1,008
Belgium, 269, 310, 349, 1,050
Berlin Electricity Works, 715
Bishop's Stortford, Harlow and Epping Gas and Electricity Co., Ltd., 389

CITY NOTES—*continued.*
Blackpool and Fleetwood Tramroad Co., Ltd., 150
,, and Lytham Tramways, Co., Ltd., 1,009
Bombay Electric Supply and Tramways Co., Ltd., 27
Boulton & Paul, Ltd., 840
Bournemouth & Poole Electricity Supply Co., Ltd., 189
Bradninch Electric Supply Co., Ltd., 837
Brazilian Traction, Light and Power Co., Ltd., 147, 389, 671, 927
Brisbane Electric Tramways Investment Co., Ltd., 671
Bristol Tramways and Carriage Co., Ltd., 227
British Coalite, Ltd., 671, 716
British Columbia Electric Railway Co., Ltd., 108, 1,010, 1,051
British Continental Electricity Co., Ltd., 25.
British Electric Traction Co., 884
British Electric Transformer Co., 429
British Westinghouse Electric and Manufacturing Co., Ltd., 507, 547
Bromley (Kent) Electric Light and Power Co., Ltd., 468
Brush Electrical Engineering Co., Ltd., 188
Buenos Ayres Lacroze Tramways Co., Ltd., 799
Buenos Ayres Tramways Co., Ltd., 389
Bulawayo Waterworks Co., Ltd., 149
Bullers, Ltd., 1,009
Burmah Electric Tramways and Lighting Co., Ltd., 927, 971, 1,010
Calcutta Electric Supply Corporation, Ltd., 25, 189, 671, 926
Calcutta Tramways Co., Ltd., 589
Callender's Cable and Construction Co., Ltd., 587
Callender's Share and Investment Trust, Ltd., 468, 507
Canadian General Electric Co., Ltd., 429, 928
Cape Electric Tramways, Ltd., 671, 758, 798
Cape Town Consolidated Tramways and Land Co., Ltd., 69
Castner-Kellner Alkali Co., Ltd., 838
Ceara Tramway Light and Power Co., Ltd., 149
Central London Railway Co., Ltd., 148
Charing Cross, West End and City Electricity Supply Co., Ltd., 189
Chatham and District Light Railway Co., Ltd., 148
Chelsea Electricity Supply Co., 189
Chile Telephone Co., Ltd., 69, 150
Chilian Electric Tramway and Light Co., Ltd., 27
China, 310
Chloride Electrical Storage Co., Ltd., 671, 716
Churchill & Co., Ltd., Chas., 25
City and South London Railway Co., Ltd., 149
City of Buenos Ayres Tramways Co. (1904) Ltd., 228, 757
City of London Electric Lighting Co., Ltd., 228
Cleveland and Durham Electric Power, Ltd., 627, 670, 758
Compania de Electricidad de la Provincia de Buenos Aires, Ltd., 189
Companies struck off the register, 389, 715
Consolidated Diesel Engine Manufacturers, Ltd., 589, 884, 927
Consolidated Electrical Co., Ltd., 148
Consolidated Gas, Electric Light and Power Co., of Baltimore, 671, 926
Cordoba Light, Power & Tractor Co., Ltd., 1,053
Costa Rica Electric Light & Traction Co., 1,012, 1,049
County of London Electric Supply Co., Ltd., 190
Craigpark Electric Cable Co., 757
Crompton & Co., Ltd., 150, 506, 1,050
Cuba Submarine Telegraph Co., 627
Cuban Telephone Co., Ltd., 69
Davis & Timmins, Ltd., 389
Delagoa Bay Development Corporation, Ltd., 757
Dick, R. and J., Ltd., 757
Dick, Kerr and Co., 467, 550, 627
Direct Spanish Telegraph Co., 468
Direct United States Cable Co., Ltd., 69, 627
Direct West India Cable Co., Ltd., 389, 429
Dorman, Long and Co., Ltd., 839, 1,050
Drake and Gorham, Ltd., 587, 669
Dublin United Tramways Co. (1896), Ltd., 69.
Dumbarton Burgh and County Tramways Co., Ltd., 429
Dundee, Broughty Ferry and District Tramways, Ltd., 468, 549
Eastern Extension, Australasia and China Telegraph Co., Ltd., 25, 550, 969
Eastern Telegraph Co., 549, 1,009
Edison and Swan U.E.L. Co., Ltd., 757, 797
Edmundsons' Electricity Corporation, Ltd., 26, 106
Electric and General Investment Co., Ltd., 928, 969
Electric Construction Co., Ltd., 107
Electric Welding Co., Ltd., 349
Electrical Securities Trust, Ltd., 1,009
Electrolytic Alkali Co., Ltd., 884
Escher Wyss and Co., Ltd., 349

CITY NOTES—*continued.*
Fairbairn, Lawson, Combe, Barbour, Ltd., 269
Ferranti, Ltd., 624, 714
France, 25, 69, 150, 189, 228, 349, 447, 550, 671, 797, 837, 1,012, 1,050
Fraser and Chalmers, Ltd., 108, 840
Gateshead and District Tramways Co., Ltd., 468
General Electric Co., Ltd., 25, 70, 107, 227
German Edison Accumulator Co., 716
German electrical companies, 390, 628, 1,052
Germany, 25, 69, 269, 626, 671, 885, 928, 1,050
Globe Telegraph and Trust Co., Ltd., 27, 508, 1,009
Hadfield's Steel Foundry Co., 269
Halifax and Bermudas Cable Co., Ltd., 389, 429
Harper Electric Piano (1910) Co., Ltd., 269
Henley's, W. T., Telegraph Works Co., Ltd., 310
Hobart Electric Tramway Co., 25
Hong Kong Tramway Co., Ltd., 671
Hornsby and Son, Ltd., R., 884
Hove Electric Lighting Co., 549
Humphrey Pump Co., Ltd., 627
Hurst, Nelson and Co., Ltd., 626
India-Rubber, Gutta-Percha and Telegraph Works Co., Ltd., 969, 1,052
Indo-European Telegraph Co., 589
Ingleton Electric Lighting and Power Co., Ltd., 587
International Light and Power Co., Ltd., 507, 969
Isle of Thanet Electric Tramways and Lighting Co., Ltd., 928, 970
Jandus Arc Lamp and Electric Co., Ltd., 228
Japan, 25, 69, 150, 190, 227, 269, 549, 587, 716, 797, 884
Johnson, R., Clapham and Morris, Ltd., 797
Kalgoorlie Electric Power and Lighting Co., 507
Kalgoorlie Electric Tramways, 229
Kaministiquia Power Co., 148, 716
Karachi Electric Supply Corporation, Ltd., 757
Kensington and Knightsbridge Electric Lighting Co., Ltd., 227
Lanarkshire Tramways Co., Ltd., 149
Lancashire Dynamo and Motor Co., Ltd., 349
Lima Light, Power and Tramway Co., Ltd., 468, 1,009
Lisbon Electric Tramways, Ltd., 587
Liverpool District Lighting Co., 910
Liverpool Overhead Railway Co., 147
Lobito, Benguella and Catumbella Electric Light and Power Co., Ltd., 228
London and Suburban Traction Co., Ltd., 148
London Electric Railway Co., 148
Mackay Companies, 349, 927
Manaos Tramways and Light Co., Ltd., 227, 308
Manila Electric Railroad and Lighting Corporation, Ltd., 429, 969, 971
Manx Electric Railway Co., Ltd., 972, 1,009
Marconi International Marine Communication Co., Ltd., 108, 1,009
Marconi Wireless Telegraph Co., Ltd., 308, 347, 507, 549, 588, 671, 1,009
Marconi Wireless Telegraph Co., of Canada, 670
Marconi Wireless Telegraph Co., of the River Plate, 549
Mather and Platt, Ltd., 229
Melbourne Electric Supply Co., Ltd., 884, 969, 1,010
Metalite, Ltd., 388, 625, 756
Metallic Seamless Tube Co., Ltd., 671
Metropolitan District Railway Co., 147
Metropolitan Electric Supply Co., Ltd. 189
Mexican Light and Power Co., Ltd., 25, 549
Mexico Tramways Co., 25, 698, 757
Monterey Railway Light and Power Co., Ltd., 189
Monte Video Telephone Co., Ltd., 671, 756
Montreal Light, Heat and Power Co., Ltd., 229, 713
Nagpur Electric Light Co., Ltd., 716
Nairobi Electric Power and Lighting Co., Ltd., 108
National Boiler and General Insurance Co., Ltd., 310
,, Electric Construction Co., Ltd., 838
,, Gas Engine Co., Ltd., 227
,, Telephone Co., Ltd., 190, 227, 715
,, Telewriter Co., Ltd., 970
New British Ever-Ready Co., 797
Newcastle and District Electric Lighting, 349
Newcastle-on-Tyne Electric Supply Co., Ltd., 108
New Companies in 1913, 230
,, Issues, 587
Northampton Electric Light and Power Co., Ltd., 230
Norway, 349, 671, 885
Norwegian Hydro-Electrical Nitrogen Co., 840
Norwich Electric Tramways Co., Ltd., 671, 713
Official announcements re companies, 507, 758, 1,009, 1,050
Oldham, Ashton and Hyde Electric Tramway, Ltd., 310

CITY NOTES—*continued.*
Ontario Power Co., of Niagara Falls, 310
Oriental Telephone and Electric Co., Ltd., 626
Oxford Electric Co., Ltd., 269
Paignton Electric Light Co., Ltd., 147
Para Electric Railways and Lighting Co., Ltd., 310
Paris Tramway Finance, 797
Parsons Foreign Patents, Ltd., 587
,, Marine Steam Turbine Co., Ltd., 589
Perth Electric Tramways, 69, 229
Power-Gas Corporation, 927, 969
Provincial Cinematograph Theatres, Ltd., 884
,, Tramways Co., 840, 885
Quebec Railway, Light, Heat and Power Co., Ltd., 627
Reduction of capital, 269, 671, 716, 837, 926
Rio de Janeiro Tramway, Light and Power Co., Ltd., 25, 549
Rushden and District Electric Supply Co., Ltd., 840
Ruston, Proctor & Co., Ltd., 884
Russia, 69, 189, 228, 1,012
St. James' and Pall Mall Electric Light Co., Ltd., 149
Sankey, J., and Sons, Ltd., 797
Sao Paulo Tramway, Light and Power Co., Ltd., 25, 589
Shawinigan Water and Power Co., Ltd., 25, 1,049
South America, 507
South American Light and Power Co., Ltd., 149
,, Metropolitan Electric Light and Power Co., Ltd., 269, 389, 429, 549
Spain, 1,012
Spanish and General Wireless Trust, Ltd., 228
Spencer & Sons, Ltd., Jofin, 269, 349
Stewarts & Lloyds, Ltd., 389
Stock Exchange notices, 148, 189, 310, 349, 389, 468, 507, 589, 671, 713, 758, 797, 840, 885, 927, 969, 1,009, 1,050
Stothert & Pitt, Ltd., 508
Sunderland & District Tramways, Ltd., 549, 587, 669
Sweden, 671
Switzerland, 227, 468, 671, 797
Traction & Power Securities, Co., Ltd., 227
Tyneside Tramways and Tramroads Co., Ltd., 269
United Electric Car Co., 429, 507
,, Electric Tramways Co., of Caracas, Ltd., 671, 715, 757
,, River Plate Telephone Co., Ltd., 587
Victoria Falls and Transvaal Power Co., Ltd., 468, 548, 716, 1,009
Waste Heat and Gas Electrical Generating Stations, Ltd., 269
Water Softeners, Ltd., 716
Waygood & Co., Ltd., R., 25, 69, 928
West African Telegraph Co., Ltd., 757
Western Telegraph Co., Ltd., 713, 758, 837
,, Union Telegraph Co., 671
West India and Panama Telegraph Co., Ltd., 757, 797, 839
,, Kootenay Power & Light Co., Ltd., 840
Westminster Electric Supply Corporation, Ltd., 189
White & Co., Ltd., J. G., 26
Winnipeg Electric Railway Co., Ltd., 468, 1,009
Yates & Thom, Ltd., 757
Yorkshire Electric Power Co., 148, 467
,, (West Riding) Electric Tramways Co., 1,009
Zurich Bank for Electrical Enterprises, 627

Clocks at Montreal, Electric, 753
,, Electric, 696
,, for Southport, Electric, 459
Club, The Osram and Robertson, 583
Clyde Valley Power Co.'s undertaking, 933
Coal-cutting machines and coal output for the year 1912, 597
,, dust in air, The inflammability of, by Prof. W. M. Thornton, 679
,, gas and electricity, 202
,, Mines Act, 1911, 415
Coating metals with lead, 496
Cockerill Steel Works at Seraing, Belgium, The electrical plant at the, 267
Codicils, Christmas and, 986
Collieries, Power transmission at, 765
Colliery "Electricians," 185
,, Electrification of the Cannock Chase, 318
,, exhaust steam plant, 1,039
,, explosions, 685
Colonial demand for engineers, 668
,, tariffs on electrical goods, Foreign and, 119, 159, 240, 280, 319, 359, 480, 519, 559, 599, 683, 811, 852, 895, 983, 1,003
Combine, Tramway Workers'. 545
Commercial Motor Vehicle Exhibition at Olympia, The, 143
Commission, International Electrotechnical, 428, 465
,, The International Illumination, 386
Committee, A Wireless advisory, 121

Competition in Australia, Electrical, 909
" in wire lamps in Germany, 498
" International Electrical, 293
Conciliation Boards, L.C.C., 23, 967
Concrete, Electrolysis and armoured, 807
Condenser machine, The, 323
Conductors, Rules for insulated, 369
" through glass, A new method of sealing electrical, by J. S. Anderson, 633
Conduit laying, Then and now, 112
Conference, Engineering Trade, 882
" Municipal Tramway, 427, 482, 505, 522, 553, 595
Congress, 1915, International Engineering, 267
" San Francisco, 1915, International Electrical, 48
Consequence of negligence, The, 122
Constants, Meter, by "X. Y. Z.," 422
Consular notes, 15, 98, 212, 333, 569, 610, 623, 1,034
Consulting Engineers, The Association of, 583
Consumers' Hire Accounts, by "Interested," 690
" Lists of, 931
Consumption of Copper, lead, tin and zinc in 1912, 145
Contacts between electrical conductors, by W. H .Eccles, 595
Continuity, 401
Contract, A Chinese, 363
" prices, Publication of, 811

CONTRACTS CLOSED—
Aberdeen Line, 1,004
Accrington, 64, 385, 915, 1,004
Admiralty, 1,038
Argentine, 138, 544, 709, 959
Ashton-under-Lyne, 1,004
Atherton (Near Manchester), 21, 184, 264
Australasia, 463
Australia, 138, 264, 304, 338, 385, 426, 503, 578, 616, 660, 710, 752, 793, 831, 879, 916, 959, 1,004, 1,038
Austria, 504, 544
Bacup, 385, 752, 915, 959
Banbury, 304
Barking, 544
Barnes, 1,004, 1,038
Barnsley, 832
Barnstaple, 184, 385
Barrow, 64
Basingstoke, 710
Batley, 959
Battersea, 793, 960
Battle, 544, 578
Bedford, 915
Belfast, 21, 64, 504
Belgium, 64, 138, 184, 264, 304, 338, 385, 463, 504, 544, 660, 710, 752
Bermondsey, 104, 752, 832
Bettws-y-Coed, 104
Bexhill, 463, 915
Bexley, 463, 544
Bispham, 21, 426
Blackburn, 265
Blackpool, 463, 578, 880
Bolivia, 304
Bolton, 21, 218, 304, 385, 660, 916
Bombay, 578
Bournemouth, 64, 426, 463, 1,004
Bradford, 64, 184, 426, 616, 660, 710, 960, 1,004
Bridlington, 224, 793
Brighton, 64, 463
Bristol, 64, 224, 426, 544, 793
Burnley, 224, 426, 578
Bury, 578, 916
Bury St. Edmunds, 304
Buxton, 64
Caledonian Railway, 960
Calgary, 832
Cambridge, 793
Canada, 21, 138, 184, 383, 463, 616, 660, 752, 832, 916, 960
Canberra, 338
Canterbury, 64, 224
Cape Colony, 265
Cape Town, 64, 504, 793
Cardiff, 504, 616
Carlisle, 660
Carlvle, Sask., 463
Cheltenham, 104
Chester, 21
Chesterfield, 304, 1,004
China, 544
Clacton-on-Sea, 64, 1,004
Cleckheaton, 224
Cleethorpes, 660
Colchester, 64
Colne, 960
Constantinople, 752
Coventry, 578
Croydon, 21, 104, 184
Darlington, 960
Dartford, 385, 544, 916
Darwen, 915
Delabole (N. Cornwall), 880
Deptford, 578
Derby, 184, 544
Doncaster, 21, 65, 184, 426
Dover, 21, 1,004
Dublin, 544
Dundee, 426
Dukinfield, 138
Ealing, 138
Eastbourne, 578
East Ham, 138, 544, 616, 880, 960
Eccles, 65, 184, 224, 338, 916
Edinburgh, 21
Elland, 104
Epsom, 504
Falkirk, 184
Fareham, 616

CONTRACTS CLOSED—*continued.*
Farnworth, 710
Faversham, 504, 880
Fleetwood, 138, 265, 544
France, 265, 338, 660, 710, 880, 960
Germany, 265 ,504, 578, 793, 1,038
Gillingham (Kent), 65, 224
Glasgow, 65, 224, 265, 338, 426, 504, 578, 793, 880, 1,004, 1,038
Gloucester, 578
Goulburn (N.S.W.), 959
Government contracts, 138, 304, 504, 660, 832, 1,038
Gravesend, 880
Grimsby, 916
Hackney, 504, 578, 960
Halifax, 224, 385
Hamilton (Ontario), 916
Hammersmith, 504, 617, 752, 880, 1,005
Hampstead, 1,038
Hanley (Sask.), 916
Harwich, 104, 304, 616
Haslingden, 578
Hazel Grove, 616
Heathfield (Sussex), 710
Hereford, 65, 265, 660, 880
Heston and Isleworth, 65, 104, 184
Heywood, 304, 426, 710
Highfield, 832
Hornsey, 104
Huddersfield, 138, 184, 578, 710
Hungary, 184
Ilford, 463
Ilkley, 960
India, 578
Ipswich, 752
Italy, 265, 463
Keighley, 143, 338, 504, 660, 960
Kingston, 21, 184, 544
Lancaster, 224, 578
Lamp contracts, 65, 104
L.C.C., 65, 184, 544, 616, 666, 710, 752, 832, 880, 915, 916, 960, 1,005
Leeds, 65, 616
Leicester, 710, 880
Leigh, 752
Leighton Buzzard, 660
Leith, 1,004
Leyton, 22, 104, 184, 578, 752
Limerick, 752
Lincoln, 463
Lisnaskea, 752
Littleborough, 660
Liverpool, 338, 426, 916
Llandaff and Dinas Powis, 960
Llandudno, 265
London, 21, 65, 104, 138, 184, 265, 338, 504, 544, 578, 616, 666, 710, 752, 793, 832, 880, 915, 916, 960, 1,005, 1038
L. & S. Western Railway, 880
Long Ashton, 143
Long Eaton, 504
Loughborough, 265, 832
Luton, 185, 504, 710, 916
Maidenhead, 752, 916
Maidstone, 660
Malay States, 104
Malvern, 463, 660
Manchester, 65, 265, 426, 578, 752, 960
Marylebone, 185, 578, 793
Melbourne, 385, 710, 831, 916, 959
" railways, 1,004
Melton Mowbray, 21, 304, 617
Mexborough, 345
Middlesex, 224
Middleton, 578
Mirfield, 224
Montreal, 660
Newcastle (Co. Down), 1,005
Newport (Mon.), 104, 265, 504, 617, 710, 793
New South Wales, 338, 496, 503, 660, 879, 880, 916, 959, 1,004, 1,038
" Zealand, 143, 304, 385, 426, 578, 660, 1,005
Norwich, 1,005
Nuneaton, 143, 1,005
Orsett (Essex), 617
Ottawa, 463, 752, 832
Oxford, 617
Padiham, 793
Paisley, 224, 793
Paraguay, 463
Perth, 385, 463, 578
Peterborough, 22, 224, 345
Plymouth, 916
Pontefract, 1,005
Poplar, 544
Queensland, 338, 503, 1,004
Ramsbottom, 104, 143, 617
Ramsgate, 385
Rawtenstall, 184, 578
Regina (Sask.), 21
Reigate, 65
Rhyl, 104
Rochdale, 504
Rotherham, 65, 143, 265, 385, 578, 880, 960
Rougemont, P.Q., 832
Runcorn, 832
St. Helens, 65, 960
St. Marychurch, 265
St. Pancras, 544, 710
Salford, 22, 224, 385, 578, 710, 916, 1,005
Sevenoaks, 185
Shanghai, 617
Sheffield, 65, 265, 426, 578, 666, 793, 960
Sherburn, 304
Shoreditch, 224, 916
Simla, 463
Skipton, 752
Sleaford, 832
South Africa, 426, 666
Southampton, 22, 65, 104, 185, 464, 544, 916

CONTRACTS CLOSED—*continued.*
South Australia, 660, 1,004
Southend-on-Sea, 143, 504, 1,038
South Shields, 65
Southwark, 65, 752
Stafford, 666
Stalybridge, 22, 385
Stepney, 65, 544, 617, 960
Stockport, 65, 265
Stockton-on-Tees, 345
Stoke Newington, 832, 880
Stoke-on-Trent, 185, 578
Stretford, 426
Sunderland, 65, 304, 464, 710, 832, 1,005
Swansea, 104
Swift Current, Sask., 832
Swindon, 504
Sydney, 304, 385, 616, 710, 831, 879, 916, 1,004
Tasmania, 338, 426, 463, 959
Toronto (Ont.), 916
Torquay, 143, 617
Tunbridge Wells, 793, 960
Twickenham, 832
Tyldesley, 385
Tynemouth, 304
Victoria, 338, 426, 503, 660, 879, 959, 1,004
Wakefield, 65, 617, 960
Walsall, 104, 185, 265, 385, 464, 617, 793, 960, 1,005
Walthamstow, 143, 544, 666
Warrington, 22, 265, 385, 666, 916
Watford, 104, 960
West Bromwich, 104, 224
Western Australia, 338, 1,004, 1,038
West Ham, 104
Westminster, 960
Weymouth, 1,038
Whitwood, 224
Wigan, 265
Willesden, 104, 185, 224, 710
Wimbledon, 544, 752
Winchester, 104, 426
Winnipeg, 184, 463, 752, 916
Wolvernampton, 104, 960
Woolwich, 65, 578, 710
Worthing, 710, 793, 960
Yarmouth, 143, 464

CONTRACTS OPEN—
Aberdeen, 577, 831
Abergele (North Wales), 58
Accrington, 915
Adelaide, 21, 103, 425, 462, 503, 577, 615, 659, 1,038
Ainsworth, 1,003
Aldershot, 709
Alford (Lincs.), 103, 137
Allahabad, 709, 751
Antwerp, 831, 870
Argentina, 915
Ashton-under-Lyne, 915
Australia, 20, 58, 103, 137, 183, 218, 258, 298, 337, 384, 425, 462, 502, 538, 577, 615, 659, 709, 746, 787, 831, 870, 915, 958, 1,003, 1,038
Austria, 137, 183, 298, 378, 425, 538, 746
Azores, 709, 752, 793
Bacup, 258
Banbridge, 659, 709
Basingstoke, 298, 338, 378
Batley, 64
Battersea, 709, 751
Beckenham, 709, 746
Bedford, 659, 709, 746, 1,003
Belfast, 21, 64, 103
Belgium, 21, 64, 137, 183, 218, 258, 298, 338, 384, 425, 462, 503, 538, 615, 709, 746, 787, 831, 870, 915, 959, 1,003, 1,038
Berlin, 659
Bermondsey, 425, 463, 503, 538, 577, 616
Bingley, 384, 425, 870
Birkenhead, 21, 64, 831, 870
Birmingham, 298
Blackburn, 103, 137
Blackhill (Co. Durham), 64, 103
Bloemfontein, 104, 138, 184, 218
Bohemia, 915
Bootle, 787, 959
Bosnia, 103
Bournemouth, 218, 258, 303, 709, 746
Bradford, 218, 258, 303, 338, 577, 615, 709, 746, 787, 870, 915, 959
Bremen, 870
Brighouse, 183, 218
Brighton, 378
Brisbane, 218, 258, 298, 337, 538, 577, 659, 709, 746, 787, 915, 958
Bristol, 103, 137
Brussels, 258, 870
Brymbo (Near Wrexham), 577, 615
Bulgaria, 615, 659, 709, 787, 870
Burnley, 384, 425, 462
Bury, 183, 218, 258, 303
Calstor, 1,003
Calgary, 787
Canada, 384, 495, 503, 538, 577, 616, 709, 787, 870, 959, 1,003
Canary Islands, 183, 746
Canberra, 218, 258, 787
Canterbury, 462
Cardiff, 303, 338, 384, 538, 577, 616, 959
Carlisle, 959
Chatham, 831
Chile, 64, 103, 137
China, 538, 577, 616
Clonakilty (Co. Cork), 303
Colchester, 915
Constantinople, 462
Costa Rica, 338, 384
Coventry, 870
Crete, 959
Crompton, 831
Dartford, 338, 384, 425
Darwen, 915

CONTRACTS OPEN—*continued.*
Doncaster, 264, 303
Douglas (I.O.M.), 384, 425
Dublin, 183, 218, 264, 303, 462, 577, 616, 659, 709, 746, 787
Dumfries, 616
Dundee, 303, 503
Durban, 959
Durham, 831
Eastbourne, 425, 538
Eastry (Kent), 616
Eccles, 21, 64, 103
Edinburgh, 303, 338, 384, 538, 831, 915
Egypt, 218, 264, 303, 338, 425, 462
Exeter, 959
France, 64, 137, 183, 218, 264, 462, 503, 538, 751, 831, 870, 915, 959, 1,003
Frinton-on-Sea, 218
Fulham, 793, 831
Gateshead, 787, 831
General Post Office, 218, 831, 870, 915, 959
Germany, 103, 137, 264, 303, 338, 384, 425, 462, 503, 659, 870
Glamorgan, 577, 616, 659, 709
Glasgow, 709, 870
Greece, 384, 425, 462
Greenock, 137
Grimsby, 709, 751
Hackney, 21, 64, 104, 959, 1,004
Halifax, 264, 462, 538, 577
Hammersmith, 384, 425, 463, 503, 751, 793
Hastings, 218
Havre, 218
Heckmondwike, 137
H.M. Office of Works, 21, 64, 104
Hobart (Tas.), 615, 659, 709, 746
Holland, 463, 503, 959
Hoylake and West Kirby, 425, 463
Huddersfield, 787
Hull, 103, 137
Hungary, 264, 831
Hyde, 264
Ilford, 137, 183
Ilkley, 425, 463, 503, 538
India, 21, 64, 463, 659, 709, 751
Italy, 103, 183, 793, 831
Jerusalem, 959
Johannesburg, 503, 538, 577, 959
Keighley, 463, 503, 793
Kingston-on-Thames, 21
Kirkcaldy, 218
Lancashire, 303, 338, 384
Launceston (Tas.), 615, 659
Leeds, 1,003
Leicester, 384, 425, 463, 503, 538, 709
Leigh (Lancs.), 915, 959
Leith, 659
Littleborough (Near Rochdale), 183
Liverpool, 425, 538, 959
London, 21, 64, 104, 137, 183, 264, 303, 338, 384, 425, 463, 503, 538, 577, 616, 659, 709, 751, 793, 831, 870, 915, 959, 1,003
London County Council, 64, 104, 137, 218, 264, 384, 538, 577, 659, 709, 751, 793, 831, 870, 915, 959 1,004
Madeira, 425
Madrid, 21, 463
Malta, 21
Malvern, 264
Manchester, 218, 264, 338, 538, 577, 616, 660, 752, 793, 831, 870, 915, 959
Melbourne, 258, 298, 337, 384, 425, 462, 503, 870, 958, 1,003, 1,038
Middleton, 104, 137, 503, 538
Morocco, 303, 384
Motherwell, 616
Naples, 793
Neath, 660
Neufchateau (Belgium), 831
Newport (Mon.), 21, 64, 104, 137, 183
New South Wales, 21, 58, 103, 137, 337, 384, 425, 462, 502, 538, 577, 958
" Zealand, 64, 104, 137, 183, 303, 384, 425, 463, 503, 538, 577, 616, 660, 709, 752, 793, 831, 870, 915, 959
Northampton, 1,004, 1,038
Norway, 21
Norwich, 104, 137, 183, 218
Nottingham, 870
Nuneaton, 21, 64
Oldham, 21, 384, 425, 709
Ormskirk, 303
Orsett (Essex), 425
Ostend, 218
Paris, 264, 831
Perth (Aust.), 258, 298, 337, 384, 425, 462, 502, 538, 577
Plymouth, 137, 183, 218, 303, 793, 831, 870
Pontypridd, 831
Port of London Authority, 709
Portsmouth, 64
Portugal, 915
Puerto Plata, 219
Queensland, 20, 58, 103, 137, 218
Rainhill (near Liverpool), 752, 793, 831
Ramsbottom, 915
Rathmines and Rathgar, 616, 660, 709
Rhyl, 616, 660, 709, 752, 793
Rochdale, 264, 303, 503, 538, 577
Rome, 831
Roscrea, 21, 64
Rotherham, 21
Rotherhithe, 104, 137
Roumania, 21, 64, 184, 338, 384, 425, 959
Royal Mint, 218, 959
Salford, 21, 463, 503, 1,004
Saxmundham (Suffolk), 463, 503
Scarborough, 21, 64
Servia, 137, 264
Shanghai, 138, 184, 218, 264, 303, 538

CONTRACTS OPEN—*continued.*
Sherburn (Co. Durham), 104
Shipley, 64, 104
Shoreditch, 831, 870, 915, 959
Skewen, 303, 338
South Africa, 64, 104, 138, 184, 218, 264, 338, 384, 503, 538, 577, 870, 959
,, Australia, 21, 58, 103, 425, 462, 538, 577, 615, 659
,, Shields, 503, 538, 577, 870, 915, 959
Southampton, 1,004
Southend-on-Sea, 1,038
Spain, 21, 138, 184, 218, 264, 303, 338, 425, 463, 503, 538, 577, 616, 660, 709, 752, 793, 831, 915, 959, 1,004, 1,038
Spanish North Africa, 184
Stockholm, 870, 915
Stockton, 870, 915
Swansea, 752, 1,004
Sweden, 544, 870, 915
Swindon, 64, 104, 138, 544, 577
Sydney, 21, 258, 337, 384, 425, 462, 502, 615, 659, 709, 746, 787, 831, 870, 915, 958, 1,038
Taunton, 21
Thakeham (Sussex), 616
Todmorden, 64, 104, 138
Torpoint, 831
Trowbridge, 660
Trubau (Bohemia), 915
Tunbridge Wells, 384, 425
Turkey, 385, 425, 831, 1,004
Uganda, 496, 463
Valencia, 793
Valenza (Spain), 616
Victoria, 20, 58, 103, 137, 218, 337, 384, 425, 462, 503, 538, 577, 615, 787, 870
Wakefield, 184, 218, 264, 303, 338, 709, 752, 793, 831, 879, 915
Walsall, 303
Walthamstow, 463, 503, 544
Warrington, 21, 104, 138, 184, 338, 385, 503, 544, 577, 660, 752, 793
Western Australia, 20, 58, 103
West Ham, 21, 303, 338
,, Hartlepool, 64, 616, 660, 831, 879
Weymouth, 879
Whitwood, 385
Wigan, 184, 385, 426, 959
Wimbledon, 218, 264, 303, 338
Wolverhampton, 709, 752, 915, 959
Worksop, 915, 959
Worthing, 426, 463, 503
York, 218, 264, 577, 831, 915, 959
Yorkton (Sask.), 870, 915

Contractors' Association, Scottish Electrical, 66
Control, Automatic train, 618
,, Personal, 321
Controllers for haulage service in coal mines, Electric, 638
Cooking at Victoria, B.C., Electric, 1,041
,, and heating, Domestic electric, by Prof. J. T. Morris, 523
,, campaign, Results obtained from active electric, 304
,, Electric, by W. H. Alabaster, 451
,, for the smaller consumer, Electric, 603
,, in L.C.C. schools, Electric, 967
Cooling gas engines, 163
,, gas engines, A new method of, by Prof. Bertram Hopkinson, 172
,, of rolling-mill motors, The, 39
Co-operation, 1,025
,, v. monopoly; Conservation v. waste, by D. S. Martin, 314
Co-operative control of electric supply undertakings, by R. A. Chattock, 1,017
Co-partnership, 209
,, Trade Unions and, by J. B. C. Kershaw, 632
Co-partnery or co-partnership? 942
Copper, 67, 144, 203, 233, 254, 283, 306, 362, 427, 442, 559, 563, 583, 668, 687, 794, 815, 922, 942
,, and aluminium cables for mining work, by Burke-wood Welbourn, 117
,, Commercial aluminium, and duralumin. Exposure tests of, by E. Wilson, 489
,, lead, tin and zinc in 1912, The production and consumption of, 145
Corea, 610

CORRESPONDENCE—
Air filtration, Cooling and ventilation of electrical machinery, by H. R. Witting, 169
Apparatus on hire, by The Electric Motor and Stove Hiring Co., Ltd., 446, 525; by T. C. Parsons, 493; by G. H. Elliott, 525; by D. Huntley, 566
A.E. (S.) E., by "Snob," 527; by W. A. Jones and W. J. Ebben, 566
Asbestos insulation, by The Concordia Electric Wire Co., 990
Association of Mining Electrical Engineers, by W. Baxter, 902; by A. Hall, 948; by "J. W. A.," 990; by "Nemo," 991

CORRESPONDENCE—*continued.*
Australian power station contract, An, 946
Batteries for telephones, by "E.C.R.," 645
Birds and railway accidents, by "Traveller," 526
Boiler furnace efficiency, by "E. W. L. N.," 990
British engineering position in China, by "An Old China Hand," 168
,, Engineering Staff Association, Proposed, by "A.M.I.E.E.," 3; by L. H. Fletcher, 4; by "Acting Council of the Association," 88
,, trade with Canada, by Percy Joyce, 143
,, trade with China, by Prof. C. A. M. Smith, 66
Call to the soil, A, by A. V. Beuck, 774
Canada, British trade with, by Percy Joyce, 143
Canadian electrical trade, by H. H. Berry, 775, 860, 903; by Leonard Andrews, 858; by A. Lester Taylor, 948; by C. A. Atherton Atchley, 989
Capping wood casing, by C. Jennings & Co., 860
Charge engineer's complaint, A, by J. Fredericks, 493; by "Converter," 526; by "Ambitious," 526; by W. J. Ebben, 526; by T. Hall, 565; by "Assistant,," 565
China, British trade with, by Prof. C. A. M. Smith, 66
Christmas presents, by "Anti-Corruption, 990
City Guilds examinations, The, by W. Perren Maycock, 409, by W. Ellerd-Styles, 443
Clients, To, by Ferranti, Ltd., 646
Code books for engineers, by Newton McLaren, Ltd., 946; by C. H. Cole, 991
Collapse of end winding of a D.C. armature, by "F. W. W.," 368
Concerning a Review, by E. Raymond-Barker, 988; by R. Rankin, 1,029; by "The Reviewer," 1,029
Conservation and waste, by "B.," 331
Continuity, by "Tosh," 446; by H. E. Yerbury, 494; by E. Raymond-Barker, 494; by "Musicus," 494
Cooking for the smaller consumer, Electric, by Simplex Conduits, Ltd., 691; by "The Writer of the Article," 735
Co-operative control of electric supply undertakings, by A. Hugh Seabrook, 1,030
Cost of living in India, by "A Young Engineer," 735
Diesel engine, The, by P. A. Spalding, 605; by D. E. Mc Donnell, 646; by C. J. Wood, 817, 902
Drastic procedure, by "Fiat justitia, ruat Cœlum," 858
Dry and wet air filters, by Sturtevant Engineering Co., Ltd., 209; by W. H. F. Murdoch, 245; by H. R. Witting, 286
Durability of electric plant, The, by W. Poynter Adams, 446
Electric clocks, by H. T. W. Bowell, 774, 947; by F. Hope-Jones, 917, 947; by A. J. Bousfield, 902; by G. B. Bowell, 991; by H. Bevan Swift, 991
Electrical accidents in mines, by "Armour," 857; by St. Helens Cable and Rubber Co., Ltd., 948
,, life hazard, by H. H. Berry, 775; by Chiswell and Co., 776
Etiquette, A question of, by J. Riley, 208, 331; by Cunningham, Ltd., 285; by M. Farrer, 332
Extra-high-pressure cables, by E. Coates, 734
Feeder resistances, by "Feeder," 48
Greatest New York, by "V.," 495
"Hand" of an armature, The, by G. Moores, 495, 566; by Humphry MacCallum, 527
Heating elements, by Standard Electrical Heating Co., 1,029
Hertzian waves injurious? Are, by Ozonair, Ltd., 125
Joints in submarine high-pressure cables, by O. W. Brain, 902
Lead-tin alloys, by C. A. Smith, 860
"Light and illumination: Their use and misuse," by L. Gaster, 125
Lighting of trains, The electric, by "Fair Play," 410
Lightning, by A. W. Isenthal, 332
,, conductors at St. Paul's Cathedral, by Killingworth Hedges, 495; by Alfred Hands, 565
Marconi contract, An echo of the, by Sir Henry Norman, 447, 604
Meaning of a suffix, The, by "B," 566
Metalite meeting, The, by "A Northern Shareholder," 445; by F. Harrison, 495
Municipal Tramway Conference, by L. C. F. Bellamy, 527

CORRESPONDENCE—*continued.*
Mutual protection of engineers, The, by W. A. Tookey, 47; by "P. O. W.," 124; by "Prospective Member," 169
New "Journal" of the I.E.E., The, by J. W. Record, 947
"Oil," by W. Antrobus, 692
Preposterous requirement, A, by "A. O. G.," 4
Pressure regulations, by G. C. Allingham, 410; by C. Turnbull, 647, 861; by W. D. Lovell, 773
Prevention of accidents in electric lifts, by W. J. F. Cooper, 3; by "Helicon," 3, 286; by Smith, Major & Stevens, Ltd., 208
Profit-sharing and co-partnership, by Theo. C. Taylor, 1,030
Question of terms, by P. W. Laverick, 903
Recording pens, by A. Dittmar, 735
Reflection intended, No, by Evershed and Vignoles, Ltd., 777; by R. W. Paul, 777
Remarkable motor records, by W. Rae Joss, 645, 735, 858; by Henry Chitty, 691, 777, 818; by "Sigma," 818
Safety of the Diesel engine, by "P. F. R." 527
Sale of electric lamps, by Electrical Accessories Supply Stores, 604
Shift engineers: A proposal, by W. E. Pritchard, 245; by C. F. Browne, 285; by "A Mere Woman," 285; by "A Common Man," 285; by "Shift Engineer," 285; by "Engineer," 332; by J. Halliday Borland, 332; by "A Man who Believes Woman his Equal," 333
Slag action in electric steel refining furnaces, by Carl Hering, 169
Specialisation, by Ferranti Ltd., 646
Status of the shift engineer, The, by "Once a Shift Engineer," 368; by "Engineer," 368; by W. J. Ebben, 410; by E. Nest, 411
Strike, by Duncan Watson & Co., 1008
Supply Authorities regulations, by Provincial Cinematograph Theatres, Ltd., 88
Switchboard makers, To, by Ferranti, Ltd., 646
Systems of wages payment and "Scientific management," by G. C. Allingham, 245
Tariff reformula, by "Erg," 368
Terms, A question of, by "An Observer," 991
Train lighting in Switzerland, Electric, by D. A. Stewart Sandeman, 495
Travelling representative, The, by "Anti-Traveller," 691; by "Traveller," 735; by "Representative Engineer," 773; by "First Office Boy up," 773; by P. O. Wittey, 857
Value of a sense of proportion, by "W. E. P.," 774
Vehicles, Electric, by "Chief Engineer," 527; by G. E. Clarke, 947
Ventilation at the Gas Exhibition, by A. C. Bostel, 605
Western Australia Parliamentary Debates, by E. E. Salter, 646
Wind-power electric plant, by W. H. Myers, 817
Wiring job, A, by A. H. Marshall, 4

Corrosion on tramway poles and its arrest, On, by A. J. Bousfield, 676
Costs, Petrol-electric 'buses: transmission strains and operating, 249
Cotton mills, Electrical driving in, 938
Country house lighting plants, 393
Courts for patent cases, Special, 643
Crane at East Cowes, An 80-ton cantilever, 381
Cricket League, Electric Supply, 464
Crompton reconstruction changes, The, 17
Crossley gas engines and producers, 127
Croydon tramway sports, 66
Crystal detectors, Theory of operation of, 763
Curves, Tramway, by A. J. Bousfield, 405

DANIEL come to judgment, A, 563
Debenture, The—Its use and abuse, 894
Decisions, Departmental, 641
Deed of assignment, 826
Delhi, The new, 225
Deliveries, 317
Departmental decisions, 641
Detector of low-voltage alternating E.M.F., The sensitiveness of the human skin as a, by Prof. H. Stansfield, 595
,, without auxiliary E.M.F., An electrolytic, 382
Detectors, Theory of operation of crystal, 763
Developments at Stuart Street Station, Manchester, Recent, 35
Diagram in the works, The winding, by G. Moores, 844
Diagrams, "Zig-zag" winding, by H. MacCallum, 1,047

Diesel accidents, The, 770
,, Dr. Rudolph, 579, 618
,, engine explosion at Bray U.D.C. electricity works, 528
,, Engine Users' Association, 753
,, engines at Kingston-on-Thames, 546
Diesel's Engine Works, The Carels-, 167
Dinner, A Manchester Staff, 882
,, Western Electric Co., 953
Disaster, The Cadder Pit, Home Office inquiry, 558
Disclaimer, 387, 415, 953
Disinfecting fluid, Electrolytic, 196
Dispatching on the Rhymney railway, Electrical train, 388
Dissolutions and liquidations, 16, 53, 98, 132, 213, 253, 293, 334, 374, 415, 532, 571, 611, 654, 698, 742, 782, 826, 866, 953, 999
Distribution system in Hamilton, Canada, by W. A. Coates, 45
Domestic electric cooking and heating, by Prof. J. T. Morris, 523
Dover, Electricity supply in, 329, 293
Dramatic performance, E.T.B.I., 761
Drill, The electric, 324
Driving, Flour-mill, 728
,, in cotton mills, Electrical, 938
,, systems for submarines, 225
Drying and purifying of insulating oils, The, 644
Dublin Local Section, I.E.E., Address to, by G. Marshall Harriss, 849
Dundee, New laboratories at, 305, 683
Dust fires, 736
Dynamos, New French car-lighting, 354

EAST Cowes, An 80-ton cantilever crane at, 381
Economising transformer manufacture, 733
Edison battery, The, 496
,, Co., The New York, 422
,, electric vehicles, 741
Educating the public in the use of light, 77
Education in London, University, 893
Educational notes, 187, 225, 267, 346, 386, 428, 464, 505, 584, 668, 795
Electric arc as a standard of light, by J. F. Forrest, 678
,, automobiles, by W. H. L. Watson and R. J. Mitchell 36
,, incubation, 165
,, light and power undertakings, Small, by H. P. Girling, 963
,, lighting on motor-'buses, 922
,, signs, 953
,, supply companies and the purchase date, London, 835
,, Supply Cricket League, 464
,, supply undertakings, Co-operative control of, by R. A. Chattock, 1017
,, truck: English experiments and American practice, The, 539
,, undertakings and water-power in Catalonia, 1030
,, vehicles, 481, 496, 987
,, Vehicle Committee, 921, 1,040
,, vehicles in England, 705
,, vehicle business in America, Further progress in the development of, by Douglas Sutherland Martin, 45, 85
,, vehicle, The, by J. W. Beauchamp, 236
,, winding gear, A novel construction in, 722
Electrical accidents in mines, 732, 803
,, accidents, 83
,, development in Germany in 1912, 122
,, heat treatment of tool steels, The, 351
,, industry and the I.E.E., The, 731
,, production of metals, 653
,, research in the United States, 427
,, terminology, 601
,, Trades Benevolent Institution, 834
,, undertakings and water-tower
,, vehicles at the Paris Motor Exhibition, 796
,, work at the National Physical Laboratory during the year, 1912, The, 5
,, work at the Physikalisch-Technische Reichsanstalt, Charlottenburg, in 1912, The, by E. S. Hodgson, 356
,, vehicles, Cheap American, 909
Electrically-driven weaving shed at Bradford, An, 835
,, -propelled cargo vessel "Tynemount," The, 661
Electrician, The architect and the, 562
"Electricians," Colliery, 185
Electricity and responsibility for fires, 1059
,, as a by-product, by R. J. Spencer-Phillips, 845
,, at $111 per k.w.-hour, 1042
,, at the Ghent Exhibition, 966, 723
,, in agriculture, 518

Electricity in mines, 769
" at the Middlesex Guildhall, 961
" Coal gas and, 202
" consumption as a trade barometer, 196
" on a Highland estate, 284
" supply in Dover, 329, 393
" supply, London's, 943, 985
" supply of large cities, by Prof. G. Klingenberg, 1060
" Supply Rifle League, 1006
" supply, The future of, 686
" to agriculture and life, Application of, 1015
" To popularise, 897
" Works, Gas-electric and by-products recovery plant at the Accrington, 259
Electrification of the Salt Union Works, 379
Electrochemical and metallurgical industry in Norway during 1912, The, 289
" industries in Norway, 303
" works in Sweden, 981
Electro-Harmonic Society, The, 585, 668, 835, 923
" -Harmonic Society, The Manchester, 585, 835, 1008
Electrolysis and armoured concrete, 807
" of peat deposits, The production of nitrates by the direct, by G. Davy, 1030
Electrolytic alkali cell and process, The Billiter-Siemens, by J. B. C. Kershaw, 273
" detector without auxiliary E.M.F., An, 382
" disinfecting fluid, 196
" iron, 400
Electromagnetic waves employed in radio-telegraphy, and the mode of their propagation, The nature of the, by Prof. G. W. O. Howe, 486
Electrometallurgy of zinc, 408
Electrostatic oscillograph, An, 807
" system for the measurement of power, The use of the, by C. C. Paterson, E. H. Rayner, and A. Kinnes, 125
Electrotechnical Commission, International, 226, 428, 465
Elevators in the Transvaal, Electric, 495
Embezzlement in Sweden, 457
Emergency plant, An, 23
Energy density, by Charles P. Steinmetz, 196
Engine starter, The Rushmore electric, 1027
" starting on motor-cycles, Electric lighting and, 834
Engineering Congress, 1915, International, 267
" Trade Conference, 882
Engineers and national agreement, 266
" Association, British, 826
" Association, The Staff, 427
" Colonial demand for, 668
" Club, Manchester, 795
" Protection of, 42
Engines, Water supply for internal-combustion, by A. N. Rye, 164
England, The electric vehicle in, 705
English-built electric truck, An, 342
" experiments and American practice, The electric truck, 539
E.T.B.I. dramatic performance, 761
Evening classes, Trade Union assistants and, 728
Exhaust steam plant, Colliery, 1039
Exhibition, A model, 618
" at Olympia, The Commercial Motor Vehicle, 143
" awards, Ghent, 571
" Barcelona, 313
" Electrical exhibits at the Canadian National, 570
" Electrical exhibits at the Olympia Motor-car, by C. J. Webb, 771, 846, 900, 944
" Electrical vehicles at the Paris Motor, 796
" Electricity at the Ghent, 366
" Ghent, 162, 653, 723
" Glasgow Electrical, 719, 751
" Ideal Home, 583
" in London, Rubber, 99
" in Spain, Electrical, 98
" Montreal Electrical, 909
" Sheffield Fuel, Light and Power, 428
" Shipping, 698, 835
" The forthcoming Gas, 483
" The Physical Society's, 922, 1008, 1031
" The Sheffield, 721
" The 1914, Rubber, 170
" 1914, Anglo-American, 922
" 1914, Nottingham Universal, 428, 987
Exhibitions, 387
Exhibits at the Olympia Motor-car Exhibition, by C. J. Webb, 771, 846, 889, 900, 944
Explosion, The Bray, 482, 528
Explosions, Colliery, 685
" Electric cable, 924
Export trade, A blow to the German, 496
Exports and imports of electrical goods during May, 1913, 31; June, 153; July, 353; August, 511; September, 675; October, 843; November, 1057
" for the half-year, German, 913
Exports, German electrical, 225
" of electrical goods, American, 313
" of electrical goods, Swedish, 631
Extensions at Bradford, Plant, 167
Extraordinary proposition, An, 145
Eye-preserving glass, 890

FACTORIES in Canada, American, 458
Fall of a steel chimney, 464
Fans, Some industrial uses for electric, 777
Faraday Society, 79, 966
Fare collection, The advantages and disadvantages of platform, by Ald. Flint, 554
Fatalities, 67, 145, 186, 266, 305, 386, 428, 464, 506, 544, 668, 711, 753, 795, 835, 966, 1008
Female labour, Male v., 710
Ferranti meters, Starting currents of, 654
Filaments, Determining the true temperature of incandescent lamp, 266
Filter Plants for electric generators, Air, 514
Finance, Municipal high, by "Cynicus," 124
Finsbury Technical College, O.S.A., 890
Fire, 496, 611, 655
" A disastrous oil-switch, 648
" American power plant, 225
" at Witton, 175
" Cadder Colliery, 835
" engine, An interesting elec., 1039
" in central stations, The prevention of, 43
" on the "Imperator," 545
" Prevention Committee, The British, 584, 653
" pump, An electrically-operated, 569
Fireproof trains, 680
Fires, Dust, 736
" Electricity and responsibility for, 1059
" in America, Central-station, 922
" in central electric lighting stations and their remedy, by Andre Gerard, The causes of, 75
" in Germany, 967
Five-day week, The, 330
Flooring, Workshop, by W. H. Booth, 397
Flour-mill driving, 728
Foreign and Colonial tariffs on electrical goods, 119, 159, 240, 280, 319, 359, 480, 519, 559 599, 683, 811, 852, 895, 983, 1063
" trade in June, 67
" trade in July, 266
" trade in August, 464
" trade in September, 585
" trade in October, 794
" trade in November, 966
Forged share certificates, 226
Formulæ for estimating sleet loads, 763
Foundries, The lighting of, 267
France, 333, 610
"F" Rays, 618
French car-lighting dynamos, New, 354
" iron works, Electrical installation at a, by Dr. A. Gradenwitz, 419
" trade with the electric furnace, 76
Frequency by static transformers, Increasing, by S. M. Powell, 323
Fuel, Lignite as station, 668
" Peat as station, 1040
Fuller block accumulator, The, 357
Furnace, Demonstration of the Hering "pinch effect" electric, by Dr. Carl Hering, 79
" French trade with the electric, 76
" The electric refining of steel in an induction, by Otto Frick, 411
Furnaces, Electric vacuum, 473
" in Sheffield, Electric steel, 154
Future of electricity supply, 686
" of Municipal enterprise, The, 642; by Geo. Offor, 1018

GARAGE, Electric, 506
Gas and electricity, Coal, 202
" -Electric and by-products recovery plant at the Accrington electricity works, 242, 259
" engine, A big, 553
" -Engine plant in Japan, A model, 141, 266
" engines, Cooling, 163
" engines, A new method of cooling, by Prof. Bertram Hopkinson, 172
" engines and producers, Crossley, 127
" engines at Accrington, The National, 316
" exhibition, The forthcoming, 483
" fires on trains, 465
" for street lighting, Arc lighting and high pressure, 598
" progress, 176
" publicity, Powder and shot, 543
Gear-wheels and pinions, Tramway, 84
Generating electricity, Windmills for, 186
Generation of electrical energy, Wind power for the, by W. H. Myers, 210
Generators, Air filter plants for electric, 514
German activity in China, 293
" electrical exports, 225
" enterprise in Russia, 835
" enterprise overseas, 667
" exports for the half-year, 313
" export trade, A blow to the, 496
" glow lamp market, The, 414
" lighting appliances tax, 1026
" telephone prices, 781
Germany, 611
" Cable manufacture in, 132
" Electrical vehicles in, 931
" Fires in, 967
" in 1912, Electrical development in, 123
" Monopoly question in, 483
" Municipal electrical enterprise in, 665
" secures trade, How, 266
" The situation of trade in, 346
" The "Weak-current" industries in, 415
" trade in, 496
Ghent exhibition, 162, 653
" exhibition awards, 571
" exhibition, Electricity at the, 366, 723
Glasgow, Electrical exhibition in, 719, 759
" exhibition electric kitchen, 865
Glass, A new method of sealing electrical conductors through, by J. S. Anderson, 633
Globes on the life of metal-filament lamps, The effect of outer, 471, 545
Golfing society, Birmingham electrical, 668
G.P.O. and electric vehicles, The, 233
Graphic instruments, Some notes on, by Kenelm Edgcumbe, 649
Greece, Electrical trade in, 824
Greenwich generating plant, 39
Guildhall, Electricity at the Middlesex, 961

HALF-WATT lamp in America, The, 263
" watt lamp, The Mazda, 346
" watt lamps, British made, 322
" watt lamps, Wotan, 966
" watt per candle lamps, 43, 104, 314, 457
Hamilton, Distribution system in, by W. A. Coates, 45
"Hand" of an armature, by Humphry MacCallum, 477
Harbour, Electrical equipment at Auckland, 1022
Haulage service in coal mines, Electric controllers for, 638
Heat tests of electrical machines, Short, by W. R. Cooper, 633
" treatment of tool steels, The electrical, 251
Heating apparatus, Australian electric, 313
" Quantitative and qualitative, 642
Hering "pinch effect" electric furnace, Demonstration of the, by Dr. Carl Hering, 79
Hertzian waves injurious? Are, 43
High-frequency alternators and their use in radio-telegraphy and telephony, 433
" pressure gas for street lighting, Arc lighting and, 598
" speed turbines at Marylebone, 917
" tension mast construction, New, 195
Highland estate, Electricity on a, 284
Hint (from Glover's Almanac), A useful, 186
Hire accounts, Consumers, by "Interested," 690
" Apparatus on, by T. C. Parsons, 436
" system, Outside shop lighting on the, by "Interested," 33
Hotel kitchen, A Brighton, 792
Hulls, The electrical protection of ships', 636
Humphrey pump tests, 1042
Hydro-electric plant, A Norwegian, 790
" electric plant, The Chester, 602, 619
" -electric resources, The world's, 1039
" electric works in Norway, 342
Hygrometer, A remote reading, 518

ICE plant at Chichester, Electrically operated, 652
Illness, A new form of, 80
Illumination Commission, The International, 386
" Committee of Great Britain, National, 1006
I.M.E.A. Convention, 1913, The, 73, 105
Imperial wireless contract, The Marconi, 161, 243
" wireless system, 250
Imports of electrical goods during May, 1913, Exports and, 31
" June, 153
" July, 353
" August, 511
" September, 675
" October, 843
" November, 1053
" of electrical machinery, Swiss, 611
Improvement and unification of English waterways, The, 678
Incandescent lamp filaments, Determining the true temperature of, 266
" lamp manufacture, Notes on, 938
Income tax, Chambers of Commerce and, 1039
Incubation, Electric, 165
India, Notes from, 3, 87
Induction furnace, The electric refining of steel in an, by Otto Frick, 411
Industrial research, 941
Industry and the I.E.E., The electrical, 731
" Science and, 1
" The Italian electrical, 123
Inflammability of coal dust in air, The, by Prof. W. M. Thornton, 679
Inquiry, Home Office, The Cadder Pit disaster, 558
Inspection for the American underwriters, British, 63
Installation inspectors, Notes for, by "Element," 33
" The private, 207, 266
Instalments, Payment by, 891
Institute of Marine Engineers, 146, 734
" of Metals at Ghent, 305
Institution and lecture notes, 23, 146, 186, 305, 346, 505, 546, 584, 623, 667, 711, 754, 794, 833, 882, 923, 966, 1006, 1041
" of Civil Engineers, 711, 967
" of Electrical Engineers, 754, 966
I.E.E. (Birmingham local section), 794, 795, 967
" Chairmen of local sections, 747
" "Journal" criticised, 922
" (Manchester local section), 711 764
" (Newcastle local section) address by Mr. C. Vernier, 693
" (Scottish local section), 795, 966
" students' tour, 1913, 210
" The electrical industry and the, 731
" (Western local section), address by H. Faraday Proctor, 696
" (Yorkshire local section), address by W. B. Woodhouse, 809, 967
Institution of mechanical engineers, 146
" of mining and metallurgy, 711
" of mining engineers, 559
" of municipal engineers, 711, 794
" of Post Office electrical engineers, 795, 966
Instruments, Some new forms of recording, 245, 268
" Some notes on graphic, by Kenelm Edgcumbe, 649
Insulated conductors, Rules for, 369
Insulating oils, The drying and purifying of, 644
Insulation for magnet coils, Aluminium, 924
" resistance, 855
" resistance, The characteristics of, 1016; by S. Evershed, 894, 934, 981
Insulator manufacture, American, 358
Insulators made in Australia, 1006
Insurance, Unemployment, 699
Interest on, and out of, capital during construction, Payment of, 383
Internal-combustion engine applied to railway locomotion, by F. W. Lanchester, 451
" combustion engines, Water supply for, by A. N. Rye, 164
International electrical congress, San Francisco, 1915, 48
" Electrotechnical Commission, 226, 428, 465
" Illumination Commission, The, 380
Inventor disengaged, An, 22
Iron and Steel Institute, 226, 387
" campaign, Electric, 998
" in electrical measuring instruments, The use of, 238
" ore, Electric smelting of, 1064
" works, Electrical installation at a French, by Dr. A. Gradenwitz, 419
Ironising boiler tubes, 415
Ironworks, New electrical, 851
Italian electrical industry, The, 123
" tariff, 692
" transaction, An, 195
Italy, 333, 569

JAPAN, 610, 742
" A model gas-engine plant, 141, 266
" Electrical progress in, 175
" Trade statistics of, 193
Japanese lamp works, New, 411
"Journal" criticised, The I.E.E., 922
Jubilee outing, A, 330
Junior Institution of Engineers, 754 967

KEIGHLEY report, A, 83
Kelvin memorials, 67, 105, 618, 711
Keokuk power development, The, 398
Kingston-on-Thames, Diesel engines at, 846

Kitchen, A Brighton hotel, 792
„ Glasgow Exhibition electric, 865
Kitchens, Large electric, 606
Kyanising in the preservation of various pole timbers, Value of, 306

LABORATORY at Dundee, New, 305, 683
Labour agreements, 241
„ conditions, Australian, 1006
„ Male and female, 710
„ unrest, The engineering, 23
Lamp Co., An Austrian, 611
„ factory in Spain, German, 998
„ in America, The half-watt, 263
„ industry in Austria, The glow, 496
„ litigation, 678
„ making in Austria, 751
„ manufacture, Notes' on incandescent, 938
„ market, The German glow, 414
„ patents in Austria, Wire, 1035
„ patents, Tungsten, 834
„ price reductions, Tungsten, 497
„ sales, American, 131
„ works in Spain, 334
„ works in the Argentine, 611
„ works, New Japanese, 411
Lamps for motor-cars, Standardisation of electric, 637, 711
„ Miners', 543
„ of high efficiency, Tungsten, 698
„ The effect of outer globes on the life of metal-filament, 471, 545
„ The new Tungsten, 687
„ Tests, "Elasta," 499
„ The Mazda half-watt, 346
„ Half-watt per candle, 43, 105
Lapland, 824
Large cities, Electricity supply of, by Prof. G. Klingenberg, 1060
„ electric kitchens, 606
Laurence, Scott & Co.,—Twenty-fifth anniversary, 427
Law of defamation, Advertisements and the, 394
Laying and records, Cable, by W. E. H. 111
„ Then and now, Conduit, 112
L.C.C., Conciliation Boards, The, 23, 967
„ The Chief Engineer's Department, 943
„ tramway termini, 898
Lead, 2, 43, 48, 98, 123, 185, 212, 254, 294, 322, 482, 495, 568, 603, 639, 653, 699, 741, 782, 825, 855, 891, 909, 986
„ Coating metals with, 496, 826
„ poisoning, 73, 668, 835
„ Rings in, 185
„ Tin, zinc in 1912, The production and consumption of copper, 145
Leaning buildings and their straightening, 689

LEGAL—
Acquittal, An, 456
Action against Aberdeen Corporation, 9
Aldridge v. Hobart Electric Manufacturing Co., 131
Alkers v. St. Helens Corporation, 951
Aron v. X. L. Electric Co., Ltd., 253, 305
Baxter & Caunter, Ltd., v. Levetus, 130, 906
Bell v. Milne, 6
Benkert v. Harman Allen Manufacturing Co., 823
Birmingham Private Telephone (New System) Co., v. Herbert Terry & Sons, 1033
Braulik v. T. W. Vaughan & Co., 568
Brecknell, Munro & Rogers, Ltd., 780
British Insulated & Helsby Cables, Ltd. v. London Electric Wire Co., & Smiths, 11, 51, 93
„ Vacuum Cleaner Co., Ltd., v. Jas. Robertshaw & Sons, Ltd., 267, 428, 823, 951
„ Vacuum Cleaner Co., v. The Daisy Vacuum Cleaner Co., The, 49
„ Westinghouse Electric & Manufacturing Co., Ltd., 864
Cable Accessories Co., Ltd., v. Wardle Engineering Co., 739
Charge of stealing, 569, 967
Charges against colliery officials, 568
Charing Cross, West End and City Electricity Supply Co., Ltd., v. The London Hydraulic Power Co., 8, 50
Colliery electricians' duties, 495
„ electrician fined, 739
„ manager summoned, 131
Company secretary fined, 668
Corfield v. Premier Electric and Hardware Co., 252, 567
Cork tramway claim, 50
Curious workmen's compensation claim, 647
Directors' contra account: What is ultra vires? 306
Dublin County Council v. Postmaster-General, 951
Dumbarton Tramway Co. sued, 692
Dundee tramway accident, 905
Edison electric lamp dispute, 67

LEGAL—*continued.*
Edwards v. Brixham Gas Co., 951, 996, 1033
Electric lamp litigation, 997
„ shock claim, 823
„ wiring prices, 610
Electricity in mines: Breach of Regulations, 252, 455, 647, 906
Elland District Council v. Harling, 739
Evershed & Vignoles v. Paul, 618
Factory Act prosecution, 648, 864
Globe Electric Co., Ltd., The, 95
Glyn v. Holophane, Ltd., 9, 49
„ v. Mygatt, 174
Grant, J. O. & Taylor v. P. G. Fraser, 305
„ Finance Co., Ltd. v. Victoria Falls and Transvaal Power Co., Ltd., 864, 952, 995
Greenwood v. Salford Corporation, 864
Griffith v. Webb, 95
Hankow Light & Power Co., Ltd., 864, 906
Hobart Manufacturing Co. v. Newcombe, 781
Hudson & Co., A. G. v. Barnard, 739
Hutchins v. L.C.C., 951
Infringement of colliery rules, 50
Johnson-Billington Electricity Meters, 11, 51
Lambourne & Co. (Manchester), Ltd. v. Estin Sheet Galvanising Co., Ltd., 211
La Plata Electric Tramways Co's action, 610
L.C.C. tramcar accident claims, 129
Litholite Ltd., v. Travis and Insulators, Ltd., 51
London tramways assessments, 906
Marconi v. Helsby Wireless Telegraph Co., Ltd., 95
Miners prosecuted, 95
Muir v. Chambers, 211
Municipal wiring arbitration, 211
Mygatt v. Glyn, 130, 174
National Electric Construction Co., Ltd. v. Redditch U.D.C., 692
„ Telephone Co., Ltd., 11
„ Telephone Co., Distribution assets, 51, 95, 129, 951, 1033
Osram Lamp Works, Ltd. v. William Glenn & Co., 387
„ Lamp Works Ltd. v. London and Provincial Electric Lamp Co., 692
„ Lamp Works, Ltd. v. Oro Light and General Supply Co., 882
„ Lamps Works Co., Ltd. v. The Ostra Light Co., 692, 739
„ Lamp Works v. David Smith and Co., 11
„ Lamp Works, Ltd. v. Yorkshire Incandescent Electric Lamp Co., 739
Patent Rights of the National Telewriter Co., 863
Paying compositions "In settlement," 145
Polkey v. Jarrott, 585
P.M.G. v. Hendon U.D.C., 50, 130, 950
Poulsen Telegraphone patent, The, 51, 94
Prested Miners' Gas Indicating Electric Lamp Co., Ltd., 130
Prosecution, 1006
Speake v. J. Stringer & Son, 906
Storekeeper's defalcations, A, 569
Sunderland District Electric Tramways, Ltd. v. Newcastle-upon-Tyne Electric Supply Co. and the County of Durham Electric Power Supply Co., 739, 781, 996
Taylor v. Leyton U.D.C., 905
Telephone rents, 865
Tottenham U. D.C. v. Metropolitan Electric Tramways, Ltd., 8, 174
Tramcar obstruction, 906
Tramway accident claims, 648, 906
„ assessment appeal (Salford Corporation), 648
„ passenger's claim for dog-bite, 648
Wolfram Lampen Aktien Gesellschaft v. Burns, Harris & Werth, 951
Workmen's Compensation, 456, 864, 906
X.L. Co.'s affairs, 387, 428, 456
„ Electric Company v. Aron, 211, 252, 905

Legal query column, Our, 34, 119, 196, 727, 767, 811, 952
Lest We Forget! The Aisgill disaster, 11, 403, 426, 443, 478, 505, 556, 855
Libraries, The artificial lighting of schools and, 385
Library lighting, 584
Licensing electricians on the Rand, 835
Life of metal-filament lamps, The effect of outer globes on the, 545
Lifting magnets in steel works, 826
Light discoverable by means of selenium, On the minimum quantity of, by E. E. Fournier D'Albe, 489
„ Educating the public in the use of, 77
Light railways, 711

LIGHTING AND POWER NOTES—
Aberayron, 571

LIGHTING AND POWER NOTES—*continued.*
Abercarn, 416, 866, 953
Aberdare, 133
Aberdeen, 214, 375, 533, 1036
Aberdeenshire, 533
Abingdon, 533
Aboyne, 783
Accrington, 53, 213, 375, 571, 611, 866, 910, 953
Acton, 133, 334, 499, 655, 700, 827
Airdrie, 499
Aldenham, 655, 783
Alderley Edge, 533
Algeria, 254, 375, 700
Alloa, 133
Arabia, 571
Arder (Co. Louth), 953
Ardsley, 783
Argentina, 254, 295, 375, 416, 612, 655, 700, 742, 827, 866, 953, 1000, 1036
Ashton, 1000
Atherton, 214, 334, 499, 742
Australia, 99, 133, 254, 295, 334, 375, 416, 499, 533, 571, 700, 742, 827, 910, 954, 1036
Austria, 54, 534, 656, 701, 743, 911, 955, 1000
Aylesbury, 214, 499, 866
Ayr, 17, 133, 1000
Ayrshire, 612
Bacup, 375, 499, 533, 911
Balderton, 416
Balearic Islands, The, 533
Ballater, 459, 783, 1000
Ballyconnell (Co. Cavan), 375, 459
Banbridge (Ulster), 612
Bangor, 612
Bannockburn, 827
Barnes, 655, 700, 827
Barnsley, 214, 655, 700, 910
Barnstaple, 17, 533, 655
Barrow-in-Furness, 53, 99, 459, 572, 743, 910
Barton-on-Humber, 214, 827
Barwell, 17, 99
Basingstoke, 335, 655
Bath, 17, 99, 572, 743
Batley, 254, 572, 783, 954
Battersea, 500, 573, 701
Battle (Sussex), 335, 416, 954
Bawtry (near Doncaster), 954
Beauly (near Inverness), 295
Beckenham, 572, 954
Bedford, 99, 533, 700, 911
Bedlington, 335
Bedworth, 214
Beeston, 866
Belfast, 53, 99, 335, 375, 572, 1000, 1036
Belgium, 99, 573, 743
Bentham, 827
Bermondsey, 100, 460, 912
Bethnal Green, 100
Beverley, 99
Bexhill, 17, 459
Bexley, 17, 459, 655, 743, 911, 1000
Bingley, 375, 866
Birmingham, 176, 459, 655
Bishop's Castle, 459
Bispham, 17, 459, 572, 655, 743, 911
Bitterne, 655, 954
Blackburn, 53, 533
Blackpool, 176, 335, 459
Blackrock (Co. Dublin), 954
Blairgowrie, 133
Bleane (Kent), 572, 743, 1000
Bocking (Essex), 954
Bognor, 416, 783
Bolton, 133, 499, 655
Bootle, 53
Bosnia, 534
Boston, 99, 254
Bournemouth, 53, 612
Bradford, 53, 99, 176, 214, 295, 416, 700, 783, 827
„ -on-Avon, 99, 911, 954
Bradwell (Staffs.), 612
Braintree, 416, 954
Brandon (Co. Durham), 99
Brazil, 416, 911
Brentford, 17
Bridge (Kent), 416
Bridgend, 743
Bridlington, 214, 533, 572, 954
Brighouse, 214
Brighton, 176
Bristol, 133, 214, 533, 572, 911
Bromley (Kent), 17, 295
Brora, 572
Brotton, and Skelton, 418
Brymbo, 335, 911, 1036
Buckhurst Hill (Essex), 133
Bulkington, 612
Burnham (Somerset), 612, 783
Burnley, 53, 533, 572, 743
Burslem, 459
Bury, 176, 255, 655
„ St. Edmunds, 99
Bushey, 99, 176
Buxton, 1036
Calverley, 499
Cambuslang, 655
Canada, 17, 176, 214, 296, 375, 416, 459, 499, 572, 655, 700, 783, 827, 866, 911, 954
Canterbury, 572
Cardiff, 53
Carlisle, 54, 133, 416, 533, 655, 954
Carnarvon, 612
Carnarvonshire, 99
Castlebar, 533
Caton, 214
Ceylon, 416
Chadderton, 133
Chartham (Kent), 335
Chelmsford, 214
Cheltenham, 214, 296, 459
Chertsey, 700
Cheshunt, 99
Chester, 176, 499, 655

LIGHTING AND POWER NOTES—*continued.*
Chesterfield, 176, 296, 827, 955, 1000
Chile, 416
China, 533, 1000
Chiswick, 827, 866
Chobham (Surrey), 534
Chorley, 214, 743, 911
Cirencester, 376
Cleckheaton, 534
Cleethorpes, 499, 911
Clevedon, 783
Clitheroe, 133
Clonakilty (Ireland), 656
Colne, 18, 534
Coniston, 655, 955
Connah's Quay, 612, 743, 955
Consett (Durham Co.), 783
Conway, 573
Cornforth, 99, 783
Corsham, 214
Cowbridge and Penybont, 866
Coxhoe (Co. Durham), 535, 743
Crewe, 100, 255, 417, 573
Cromer, 18, 134, 255, 656, 827
Crosland Moor (near Huddersfield), 827
Crowle, 459, 612, 827
Croydon, 54, 534
Cuba, 176, 459
Darlington, 743
Dartford, 296, 376, 535, 911
Darwen, 54, 376, 743, 911
Dawlish, 783
Deal, 134, 867
Delabole, 1036
Denmark, 700
Derby, 535, 573
Devonport, 573, 1001
Dewsbury, 335, 417, 743, 955
Doncaster, 134, 176, 255, 376, 417
Dover, 214, 499, 612, 1001
Dromore, 100, 499, 535, 573
Dublin, 911, 955
Dudley, 296, 335, 701
Dundalk, 376
Dundee, 867, 911, 955
Dungarvan, 134
Dunstable, 134
Durham, 54, 612
Ealing, 100, 214, 296, 417
Earlestown and Newton, 867
Easington, 867
Easingwold, 134, 955
East Barnet Valley, 460
Eastbourne, 417, 612
East Cowes (I. of W.), 573
„ Ham, 867, 955
Eastleigh and Bishopstoke, 573, 612, 955
Ebbw Vale, 54
Eccles, 535, 701
Ecuador, 417
Edinburgh, 100, 176, 214, 573, 656, 701, 827, 867
Egglescliffe, 54
Elland (Yorks.), 54, 783
Ellon, 460
Enfield, 460
Erith, 499, 701
Exeter, 176, 214, 911
Falkirk, 612
Farnworth, 54, 255
Felixstowe, 255
Feltham, 1001
Fife, 214, 255
Finchley, 177, 214, 783
Flaxton, 656
Fleetwood, 535, 656
Flintshire, 535
Flockton, 784
Foleshill, 54, 296
Fordwich (Kent), 255
Forres, 376
Fort William, 177
France, 54, 99, 296, 376, 417, 534, 700, 743, 866
Frensham, 911
Friern Barnet, 1001
Frodsham, 460
Fulham, 101
Galashiels, 134, 376, 701, 1001
Gelligaer, 417, 612, 827, 1036
German East Africa, 955
„ South West Africa, 1001
Germany, 133, 214, 335, 376, 534, 700, 866, 911, 1000
Giffnock (Renfrewshire), 827
Gillingham, 215, 743, 784, 911, 1001
Glasgow, 54, 215, 612, 656, 701, 743, 784, 1036
Gloucester, 215, 743
Godstone (Surrey), 499
Goole, 100
Grantham, 955
Grasmere, 54
Gravesend, 1001
Great Harwood (Lancs), 215, 376, 417, 460
„ Ouseburn, 573
„ Yarmouth, 827
Greenock, 134, 296, 499, 656
Greetland (near Halifax), 701
Grimsby, 701
Hackney, 54, 134, 573, 701
Halesowen, 215
Halifax, 177, 573, 701
Hamilton, 54
Hammersmith, 134, 500, 613, 744
Hampstead, 701
Hamworthy, 656
Hants, 784
Harbledown, 573
Harrogate, 296, 335, 460, 743, 1036
Harwich, 612
Haslingden, 177, 335, 376, 535, 573, 867
Hastings, 54, 177, 460, 573, 656, 955
Havant, 100, 215
Hawarden, 867
Haworth (near Keighley), 215
Hazel Grove-cum-Bramhall, 955

LIGHTING AND POWER NOTES—*continued.*
Hebburn-on-Tyne, 417, 612, 827
Hebden Bridge, 18, 376
Heckmondwike, 573
Helsby (Cheshire), 499
Henley-on-Thames, 215
Hereford, 100, 255, 867, 955
Herstmonceux (Sussex), 612
Hertford, 867
Heston and Isleworth, 18, 500, 535
Hetton-Le-Hole, 100, 417
Heywood, 100, 317, 460, 500, 573, 744, 1001
Hickleton (Yorks), 656
Higham Ferrers, 867
Highbridge, 1001
Hinckley, 335, 376, 1036
Hindley, 656, 955, 1036
Hitchin, 827
Holmfirth, 376, 612, 744, 955
Holywell, 1001
Hong-Kong, 296
Hornsey, 460, 573, 1036
Horsham, 18, 417
Hove, 100, 215, 867
Hoyland (near Barnsley), 743, 911
Huddersfield, 100, 744, 955
Hull, 18, 296, 335, 460, 613
Hungerford, 376
Hunsworth (Yorkshire), 100
Hyde, 177, 417, 955
Ilford, 18, 100, 177, 535, 744, 911
Ilkley, 784
India, 255, 296, 460, 500, 573, 656, 828, 911, 1001
Ingleton, 535
Inverurie, 744
Ipswich, 18
Irvine, 955
Isleworth, 134
Islington, 377, 784
Italy, 54, 572, 783, 955
Itchen, 1036
Japan, 18, 215, 255, 296, 460, 656, 701, 744, 911, 955, 1036
Jersey, 134
Keighley, 18, 100, 656, 955
Kendal, 18, 100, 376, 535, 784
Kenilworth, 100, 296, 701
Kenmare (Co. Cork), 911
Kettering, 573
Kevnsham, 134
Kimberley, 134
King's Lynn, 54
Kingston-on-Thames, 134
Kingstown, 215, 255, 296
Kirkburton (near Huddersfield), 956
Kirkby Lonsdale, 460, 784
Kirkby Stephen, 1001
Kirkcaldy, 100
Knaresborough, 417, 613, 956
Knighton, 1001
Knottingley, 376, 573, 784, 956
Ladysbridge, 100
Lanarkshire, 296
Launceston, 335
L.C.C., 744, 912, 956
Leeds, 54, 376, 417, 535, 613, 784, 828, 1001
Leicester, 701
Leigh (Lancs), 100
Lewisham, 134, 784
Leyton, 177, 500, 784
Limerick, 215, 912
Lincoln, 613
Listowel, 177
Littleborough (near Rochdale), 100, 500, 956
Liverpool, 613, 911
Liversedge, 100
Llandiloes, 867
Llandudno, 215, 613
Llanelly, 744
Llanfairfechan, 296, 701, 867, 956
Llanidloes, 460
Loftus, 613
London, 18, 54, 100, 134, 177, 215, 296, 335, 377, 417, 460, 500, 535, 573, 613, 656, 701, 744, 784, 828, 867, 912, 956, 1001
,, electric supply, 912
Long Eaton, 177, 500
Loughborough, 54, 613, 828
Loughrea, 702
Louth, 296
Lowestoft, 1002
Lurgan, 744
Luton, 134, 215, 500
Luxemburg, 827
Lytham, 215, 255, 702
Macclesfield, 134, 255
Macroom (Co. Cork), 500
Maguiresbridge (Fermanagh), 702
Maidenhead, 702, 912, 1002
Maidstone, 417, 702
Malta, 613
Malvern, 417, 784, 956, 1002
Manchester, 55, 215, 500, 535, 613, 656, 702, 744, 956
Mansfield, 536
Market Weighton, 500, 744
Marylebone, 18, 177, 574, 784, 956, 1002
Maryport, 177
Masham, 784
Melbourne (Derbyshire), 55
Metropolitan Asylums Board, 177
Mexborough, 500, 1036
Mexico, 19, 377
Middlesbrough, 500, 1036
Middleton, 55, 255, 417, 574, 656, 702
Mile End, 573
Minehead, 912
Moffat, 656
Monmouth, 1002
Morden, 784
Morecambe, 744
Morley, 500
Morocco, 912
Motherwell, 867
Navan, 377

LIGHTING AND POWER NOTES—*continued.*
Neath, 867
Netherlands, 572
New Caledonia, 19
Newcastle (Co. Down), 1002
,, Emlyn, 574
,, -on-Tyne, 101, 828, 912, 956
,, -under-Lyme, 784, 828, 868, 956
Newmarket, 1036
Newport (Mon.), 55, 101, 296, 377, 500, 656
New Southgate, 912
Newton-in-Makerfield, 296, 784
New Zealand, 297, 417, 500, 613, 828, 912
Northampton, 868
Northumberland, 656
North Wales, 417
Norway, 134, 335, 375, 573, 655, 743, 783, 827, 866, 955, 1000
Norwich, 134, 613, 702
Nova Scotia, 656
Nuneaton, 135, 216, 500, 657
Oldcastle, 956
Oldham, 460
Ormskirk, 297, 702
Oulton Broad, 34, 55, 255
Ouseburn, 460
Padstow, 574
Paisley, 55, 177, 460, 657
Paraguay, 101, 536
Pendlebury, 461, 956
Penketh, 744
Penmaenmawr, 956
Perth, 460, 613
Peterborough, 574
Philippine Islands, The, 536
Pickering, 784
Plymouth, 460, 702, 912
Poland, 134, 743
Pontefract, 460, 657, 828
Pontypridd, 657
Poplar, 54, 535, 701, 784
Port Erin (Isle of Man), 784
Portishead, 377
Portrush, 460, 536
Portslade (Sussex), 297
Portsmouth, 460, 500
Portugal, 214, 955
Preston, 335, 500
Purley, 912
Queens Ferry, 19, 101
Radcliffe (Lancs.), 784
Ramsbottom, 101, 255, 613
Rathmines, 784
Rawtenstall, 335, 460, 500, 657, 1,036
Reading, 255, 868
Redcar, 417, 613
Redditch, 418, 912
Reigate, 135, 912
Rhyll, 297, 657
Rickmansworth, 135, 868
Ripon, 55, 912
Rishton, 336
Rochdale, 55, 101, 255, 956, 1,036
Rochester, 55, 101, 501
Rosario, 460
Rotherham, 956
Rothesay, 216, 377, 501, 657
Royton (near Oldham), 55, 574, 784
Runcorn, 657
Rushden, 216, 613, 912
Russia, 376, 417, 572
Rye (Sussex), 101
St. Albans, 460
,, Annes-on-Sea, 101, 135, 418, 614, 744
,, Germans, 52
,, Helens, 255, 956
,, Pancras, 134, 460, 574, 701, 867
Sale, 784, 956
Salford, 216, 377, 418, 460, 501, 536, 702, 744
Sandiacre (Derbyshire), 135
Sandiway (Cheshire), 336
Scarborough, 336, 574
Scottish prov. orders, 868
Sedbergh, 868
Settle, 956
Sheffield, 55, 255, 297, 418, 613, 657, 828, 956
Shildon, 744
Shipley, 177, 744, 784, 912
Shipton-on-Stour, 702
Shoeburyness, 135
Shoreditch, 100, 377, 656, 701
Shrewsbury, 461
Siam, 19
Skegness, 19
Skelton and Brotton, 418, 868
Slaithwaite, 613, 828, 1,002
Slough, 177, 784
Somerby, 613
South Africa, 19, 55, 216, 336, 418, 461, 501, 536, 574, 613, 657, 744, 784, 828, 868, 958
Southampton, 177, 501, 574, 702, 1,002
Southend-on-Sea, 55, 657, 828, 868, 1,036
South Hetton and Haswell, 828
,, Shields, 55, 256, 702
,, Wales, 702
Southwark, 574, 1,001
Spain, 18, 134, 376, 417, 534, 572, 701, 743, 1,036
Spilsby, 216
Stafford, 1,002
Staines, 55
Stalybridge, 55, 101, 536, 702
Stanley (Co. Durham), 461
Stapleford (Notts.), 912
Stepney, 134, 535, 613
Steyning (Sussex), 501
Stirling, 501, 1,036
Stockport, 418, 574
Stockton-on-Tees, 255
Stoke-on-Trent, 55, 177, 536, 574
Stone (Staffs.), 868, 956
Stourbridge, 744

LIGHTING AND POWER NOTES—*continued.*
Stowmarket, 55
Stretford, 418, 614, 956
Sturry (Kent), 336, 614, 912
Sunbury, 1,002
Sunderland, 19, 55, 297, 614
Surrey, 868
Sutherlandshire, 536
Sutton (Yorks.), 178, 785
Swanage, 101, 255, 461
Swansea, 55, 101, 418, 461, 501, 913
Sweden, 827, 1,000
Swindon, 913
Swinford, 461
Swinton, 56, 135, 297, 461, 657, 828, 956
Switzerland, 376, 866, 1,000, 1,036
Tadcaster, 501
Talgarth, 536
Tasmania, 828
Taunton, 101, 829, 1,002
Teignmouth, 418, 702, 956, 1,002
Thornley, 101
Thornton (near Fleetwood), 101, 868
Thurnscoe, 913
Todmorden, 536, 744, 785
Tong (near Bolton), 501
Torpoint, 418, 702, 829, 956
Towyn and Aberdovey, 614
Trimdon (Co. Durham), 957
Troon, 657, 829
Trowbridge, 377, 785
Truro, 461, 1,002
Tunbridge Wells, 56, 501, 536, 785
Turkey, 572, 700
Tyldesley, 135, 377, 501
Tynemouth, 614, 829, 868
Tyneside, 744
Uruguay, 297, 829
U.S.A., 101, 657, 957, 1,036
Venezuela, 785
Wakefield, 56, 297, 614, 829
Wallasey, 102, 297, 829
Wallsend-on-Tyne, 256
Walmer, 56, 216, 867
Walsall, 102, 256, 461, 574, 785, 957, 1,036
Walthamstow, 536, 702, 868
Wanstead, 1,002
Warminster, 785
Warrenpoint, 614
Warrington, 19, 216, 461, 501, 829, 913
Waterford, 102, 297, 657, 702
Waterloo-with-Seaforth, 829
Watford, 102, 216, 614, 656, 785, 957, 1,002, 1,036
Weaverham (Cheshire), 336
Welshpool, 178
West Bridgford, 1,002
,, Bromwich, 216, 829
,, Ham, 135, 957, 1,002
,, Hartlepool, 56, 536
,, Kent, 574
,, Lancashire, 957
,, Yorkshire, 957
Westgate-on-Sea, 102
Weston-super-Mare, 614, 744, 829
Weymouth, 1,036
Whitefield (Lancs.), 79
Whitehaven, 297, 614
Whitley Upper, 1,002
Whitstable, 102, 461
Whitwood (near Pontefract), 536
Whitworth, 297, 785
Wigan, 744, 868, 957
Willesden, 216, 702, 1,036
Wimbledon, 56, 216, 256, 536, 744
Winchester, 418, 574
Windsor, 377, 614
Winton, 536
Wisbech, 785
Wishaw, 461
Witney, 501
Woking, 574
Wokingham, 1,002
Wolverhampton, 418, 536, 614, 785
Woodford (Essex), 702
Woolwich, 54, 177, 828, 1,002
Worcester, 614
Worksop, 614, 744
Worthing, 574
Wrexham, 19, 216, 574, 785, 957
Yarmouth, 461
Yeovil, 216, 461, 868
York, 56, 216, 377, 785, 868
Yorkshire municipal extensions, 418
Ystradgynlais, 135

Lighting and engine starting on motor cycles, Electric, 834
,, appliances tax, The German, 1,026
,, Effective window, by "Whistlefield," 975
,, Library, 584
,, of foundries, 267
,, of schools and libraries, The artificial, 385
,, plants, Country house, 393
,, Points in shop, 519
,, Queenstown (Cape Colony) Electric, 60
,, School, 940
,, sets for motor-cars, The R.A.C. trials of electric, 1,054
,, Street, 427
,, Train, 363
Lightning, by E. P. Austin, 284
,, conductors of St. Paul's Cathedral, The, 399
Lignite as station fuel, 668
,, coal in Canada, 558
Liquidations and dissolutions, 16, 53, 96, 132, 213, 253, 293, 334, 374, 415, 497, 532, 571, 611, 654, 698, 742, 782, 826, 866, 909, 953, 999, 1,035
Lists of consumers, 931
Litigation in United States, 251
,, Lamp, 678
Liverpool and District Amateur Wireless Association, 225
Ljungström radial-flow steam turbine, The, 580
Load factors in large power stations, 697
L.G.B. and electrical publicity expenditure, 882
Locomotives of the Lötschberg Railway, Electrical, 339
London & South-Western Railway Co's electrification scheme, 736
,, Electric Supply Companies and the purchase date, 835, 882
,, Electrical Masters' Association, 967
,, electricians' wages movement, 712, 796, 924, 1,008
,, traffic problem, The, 261, 287
London's electricity supply, 145, 943, 985
Losses in transmission towers, 1,006
Lötschberg Railway, Electrical locomotives of the, 339
Lowering gear for metal-filament lamps, 374

MACHINERY, The rating of electrical, 557
Magnetic susceptibility meter, A, by W. H. F. Murdoch, 633
Magnetism, Terrestrial, 600
Mail tubes, Underground, 618
Main-line electric traction, by Prof. Gisbert Kapp, 448
Maintenance of paving on tramway track, by W. C. Fenton, 555
Maison electrique at Olympia, La, 454
Management, Mine, 282
Manager, Working under a non-technical general, by "Axon," 165
Manchester electrical workers, 712, 754
,, Electro-Harmonic Society, The, 585, 835, 1,008
,, Recent developments at Stuart Street station, 35
Manufacturer, A suggestion to the electrical, 644
Marconi Imperial wireless contract, The, 161
Marine propulsion, Electric, by John Reid and H. A. Mavor, 79
Marylebone, High-speed turbines at, 917
Mast construction, New high-tension, 195
Massage, Electric, 158
Masters' Association, The London Electrical, 967
Mazda half-watt lamp, The, 346
M.E.A. in camera, 82
Measurements, Practical standards for use in electrical, 489
Measuring instruments, The use of iron in electrical, 238
,, machine, An electrical, by Dr. P. E. Shaw, 127
Meeting of creditors, 16
Melun Railway collision, 796
Mercury-vapour apparatus, A new method of starting, by J. S. Anderson, 632
,, vapour lamps, Railway signals and, 506
Metal-filament lamps, The effect of outer globes on the life of, 471, 543
,, market, 32, 233, 393, 761, 931
Metals, Electrical production of, 653
,, The passive state of, 1,015
Meter, Approved, 1,000
,, constants, by "X. Y. Z.," 422
Meters, The British standard specification for consumers' electric supply, by S. H. Holden, 810, 850, 1,032
,, Timing watt-hour, 233
Metric system, The, 738
Metropolitan Association of Electric Tramways Managers, 768
Mexico, Trade statistics of, 433
Microtropometer, The, 144
Middlesex Guildhall, Electricity at the, 961
Milk, The electrical sterilisation of, 1,023
Milking by electricity, 585
Mill lighting at Cawnpore, 459
Mine blasting, Electric, 472
,, management, 282
Miners' lamps, 543
Mines, Electric controllers for haulage service in coal, 638
,, Electrical accidents in, 732, 803, 813, 816
,, Electricity in, 769
Mining Engineers, Institution of, 559
,, machinery, Phœnix, 374
,, work, Copper and aluminium cables for, by Burkewood Welbourn, 117
Mint report, The Royal, 666
Mirrless condensing plant for the Glasgow tramways, 53
Model Engineering Exhibition, 570
,, exhibition, A, 618
Monopoly questions in Germany, 483
,, *v.* co-operation; conservation *v.* waste, by D. S. Martin, 514
Montreal Electrical Exhibition, 909
Motor-bus question, The, 83
,, -buses, Electric lighting on, 922
,, -car Exhibition, The electrical exhibits at the Olympia, by C. J. Webb, 771, 846, 880, 900, 944

Motor-cars, The R.A.C. trials of electric lamps for, 637, 711
" -cars, The R.A.C. trials of electric lighting sets for, 1,054
" -cycles, Electric lighting and engine starting on, 834
" Show, The Olympia, 814
Motors, Adjustable-speed single-phase A.C., 922
" for printing press work, Adjustable speed alternating-current, 819
" records, Remarkable, 564, 778
" The cooling of rolling-mill, 39
" Vehicle Exhibition at Olympia, The Commercial, 143
Moulders' strike, 464, 922
Multiplex radiotelegraphy, 833
Municipal electrical enterprise in Germany, 665
" enterprise, The future of, 642; by Geo. Offor, 1,018
" high finance, by "Cynicus," 124
" officers at arbitrators, 1,026
" parsimony, 2
" secrecy in agreements, 522
" Tramways Conference, The, 427, 482, 505, 553
" wages at Nelson, 266
" waste heat station, The first, 162
Museum, Spanish commercial, 415

NAMES and trade descriptions, Trade, 247
National Chamber of Trade, 464
" gas engines at Accrington, 316
" Physical Laboratory, 267
" Physical Laboratory during the year 1912, The electrical work at the, 5
Negligence, The consequence of, 122

NEW COMPANIES—
Abcar, Ltd., 187
Ajax, Ltd., 466
Anderson & Co., Ltd., D. P., 925
Ashley, E. M., Ltd., 146
Aster Engineering Co. (1913), Ltd., 596
Atmospheric Nitrates (Kilburn Scott Patents), Ltd., 466
Auto-Flash Sign Co., Ltd., 387
Autokal Syndicate, Ltd., 69
Balm Mills Estate Co., Ltd., 925
Bentham Electric Supply Co., Ltd., 713
Betts & Co., Ltd., Lester B., 68
Betulander Automatic Telephone Co., Ltd., 346
Birkenhead Rubber Co., Ltd., 968
Brilliant Signs Letras Morgan (South America), Ltd., 466
British Combustion Turbines, Ltd., 586
" Ljungstrom Turbine Co., Ltd., 187
" Railway and Tramway Interchangeable Rail Co., 307
Brown & Parsons (1913) Ltd., 466
Burnham & District Elect. Supply Co., Ltd., 147
Cayenne Motors, Ltd., 387
Central Argentine Light & Power Co., Ltd., 187
" Wire Co., Ltd., 669
Chinnerys, Ltd., 836
Clarke & Co., Ltd., W. T., 968
Climax Rock Drill & Engineering Works, Ltd., 388
Clonakilty Electric Light and Power Co., Ltd., 466
Coast Improvement Co., Ltd., 586
Cold Light (Dussaud Processes), Ltd., 624
Continuity Joint and Tube Co., Ltd., 586
Coventry Electric Cable Co., Ltd., 755
C. R. Construction Co., Ltd., 187
Crowther & Osborne, Ltd., 586
Cumberland Waste Heat Owners Co., Ltd., 836
Davy Lamp Igniter Co., Ltd., 307
Delabole Electric Lighting & Supply Co., Ltd., 68
Dickinson Electrical Manufacturing Co., Ltd., 884
Dromore Electric Light & Power Co., Ltd., 387
Eclipse Electric Sign Co., Ltd., 68
Edison Accumulators, Ltd., 268
" and Swan Electric Co. (India), Ltd., 836
Electrical Apparatus Co. (1913) Ltd., 146
" Works (Miller) Ltd., 925
Electricals, Ltd., 884
Electric Lighting & Engineering Co., Ltd., 755
" Motor and Stove Hiring Co., Ltd., 467
Enfield Electric Cable Manufacturing Co., Ltd., 797
Forward Electric Co., Ltd., 586
Fowler, John & Co. (Sydney), Ltd., 387
Fuller Accumulator Co., Ltd., 755
Galashiels and District Electric Supply Co., Ltd., 69
G. C. Accumulator, Ltd., 466
Gillitt, S., Ltd., 69
Green & Co., Ltd., Percy G., 147
Grindell Matthews Radiophone Syndicate, Ltd., 466
Handley & Robinson, Ltd., 836
Harraway Bros., Ltd., 925
Holborn Electric Fires, Ltd., 925
Holmes & Partners, Ltd., L. W., 968
Hydraulic Power Co., of Scandinavia, Ltd., 147

NEW COMPANIES—*continued.*
Igranic Electric Co., Ltd., 307
Imperial United Lamp Co., Ltd., 755
Indian Railless Traction Co., Ltd., 884
Jackson Electric Stove Co., Ltd., 69
Jones, Burton & Co., Ltd., 387
Kingolite Co., Ltd., 347
Leyburn Electric Supply Co., Ltd., 269
Lighthouse Radiator Co., Ltd., 669
Lighting Press Syndicate, Ltd., 187
Lisnakea Electric Light Co., Ltd., 347
Liverpool Electric Welding Co., Ltd., 466
Llanidloes Electric Lighting Co., Ltd., 836
Luminous, Ltd., 968
Macintosh Cable Co., Ltd., 146
Maxwell & Co., Ltd., W., 797
Metals Decoration, Ltd., 755
Midland Fan Co., Ltd., 669
Mitchelite Lighting Co., Ltd., 307
Mitchell, F. L. & Co., Ltd., 586
Mossay & Co., Ltd., 268
Musolaphone Syndicate, Ltd., 884
Napier-Kimber, Ltd., 925
Newman & Co., Ltd., 624
Northern General Transport Co., Ltd., 925
Norton, Griffiths & Co., Ltd., 925
Opel Motors, Ltd., 268
Ostro Light Co., Ltd., 586
Ozonair, Ltd., 755
Parsons, W., & Co., Ltd., 268
Pickering Hoist and Engineering Co., Ltd., J. T., 268
Plates, Ltd., 884
Portarlington Electric Light & Power Co., Ltd., 347
Radium Electric Emanation Co., Ltd., 547
Reineke's Wireless Telephones, Ltd., 307
Renew Electric Lamp Co., Ltd., 586
Sandbanks Railless Electric Car Co., Ltd., 547
Scottish Midlands Electricity Supply, Ltd., 69
Screen-Light Co., Ltd., 586
Simplex Insulators (Bourke's Patent), Ltd., 755
Somerby Electric Light Co., Ltd., 836
Standard Meter Co., Ltd., 797
Stella Conduit Co., Ltd., 226
Sunturbo Engineering Co., Ltd., 836
Syndicate, Ltd., I.L., 467
Teleradio Electric Co., Ltd., 147
Tempo Electric Supply Co., Ltd., 268
United Salt & Power Co., Ltd., 147
Universal Electric Contracts, Ltd., 925
Walker, Clarkson & Co., Ltd., 227
Watson, Marsh & Co. (Brondesbury), Ltd., 713
" Marsh & Co. (Hampstead), Ltd., 624
Wensleydale Gas & Electricity Co., Ltd., 586
Wescoscope, Ltd., 884
Western Engraving Co., Ltd., 268
Whitstable Electric Co., Ltd., 669
Woolnough, Lang, Ltd., 466

NEW ELECTRICAL DEVICES, FITTINGS AND PLANT—
Acid proof silica lamps, 290
"Adams igranic" arc-preventing interlock, 128
An emergency oil firing device for central stations, 290
Automatic electric lift, An, 566
Auto-transformer starters, 949
Bastian heaters, New, 992
"Beacon" pipe or conduit clip, 373
Belling electric fire, The, 291
Bell signal indicator, 567
Benjamin steel reflectors, 808
Bennis grates at Neasden, 90
Blackman intermittent fan, The, 92
Boot warmer, An electric, 862
Brass nut cover, 609
B.T.H. automobile switches, 490
" "Fostoria" table lamps, 682
" reflectors, New, 492
" rotary snap switches, 328
Cables for South-Western Railway electrification, 822
" for H.M.A.S. *Australia*, 12
"Calor" heating and cooking appliances, 327
Comb, An electric, 949
Conduit spacing saddles, 171
Contact suspension gear, A large, 862
Cooking at a bazaar, Tricity, 727
"Disc" moving-coil instruments, The, 51
Domestic wall plugs, 949
Dowsing heating and cooking apparatus, 490
Drum controllers and starters for slip-ring motors, 93
E.A.C. high-torque induction meter, The, 373
" productions, Some, 290
Edison miners' electric safety lamp, The, 12
" screw cap lamp, 809
Ediswan heater, An, 727
" Zenith sign, 992
Electrical floor polisher, 949
Electrically driven watering cart, 822
Electric clock movements, 608, 682
" heat carpets, 492
" lighting set, 12
" motor dust cart, An, 90
" warehouse truck for Great Western Railway, 737
Engineer's handy drill, 498
"Eye" electric motor lamp, The, 491

NEW ELECTRICAL DEVICES, FITTINGS AND PLANT—*continued.*
Ferranti transformers, 328
Fire alarms, Automatic, 992
Flarion lamp, The, 490
Flexible coupling, 531
G.E. continuous-current motor starters, 457
"Geeko" intercommunication telephones, 90
Governor control switch, 904
"Grei" semi-Diesel engine, The, 492
Handy movable crow-bar, 726
" wire drum, A, 92
"Horophone" wireless receiving set, The, 92
"Igranic" remote control circuit-breaker, Double-pole, 993
Impregnating chamber, Large, 170
Improved wireless receiver, 681
Instruction board for motor users, 11
Insulated lampholder, 808
Ironclad crane panels, 457
"Kemco" fan electric lighting dynamo for motor-cars, The, 489
Kesnor automatic motor starter, The, 738
Knife-polishing machine, A, 808
Laminated gears, 950
"L.B." steam trap, The, 609
Lighthouse radiator, The, 808
Lighting of cinema house, Sheffield, The, 171
Liquid starters, 904
Lock-nut, A new, 993
London-made electric fittings, 608
"Losles" water heater, The, 681
"Lotolite" glassware, 456
Mazda half-watt lamp, 373
Meter boards, 129
Motograph sign, The, 93
Motor, New, 171
Motors, Special, 862
New continuity fittings, 609
" cord grip, 861
" counterweight fittings, 531
" high-frequency generator for wireless work, 493
" indicator, 682
" low-tension arrester, 608
" model "Magic" cleaner, 492
" oil testing machine, A, 91
" Ozonair apparatus, 414
" Star-Delta starter, A, 91
" thrust bearing, 93
" Veluria glassware, 372
Night bell signal, 530
Novel window sign, 492
Paraffin-electric and pumping set, 681
"Pelapone" oil engine, The, 129
Pipe-ventilated motors, 737
Portable electrically-driven wire pump, 726
Porter patent safety seal, 995
"Redglo" electric fires, 530
Relay type crane panels, 994
Reyrolle flat back switchgear, 326
" wall plugs, 682
Rolled steel gears, 738
Royal Ediswan daylight lamp, 681
" heater, The, 414
R.U.V. steriliser, 681
Safety device for lifts, A, 172
St. Helens rubber tyre exhibit, A, 171
Saturn lamp, The, 808
Self-contained house service unit with "Zed" fuses, 531
Seymour patent tire, 995
Sheffield, The lighting of cinema House, 171
Siemens combined K.W.-hour and demand meter, The, 89
Silvertown motor-driven reducing gear, 822
Simplex "Diamond" suction cleaner, 371
Staircase lighting, 372
"Standard" high-speed alternator, 904
Superlux glassware, 493
Telephone attachment, A, 862
Telethermo heater, The, 862
Theatre fittings, 926
Thermometer, An illuminated, 727
Tower wagon for South Shields, 608
Townshend's new table cooking devices, 456
2,000-ampere armoured switchgear, 861
Vacuum gauge, A new, 129
Vancouver telephone cable, The, 328
Variable speed A.C. motors, 993
"Velveduct"—a new conduit, 808
Vibrating grindstone, An electrical, 809
Watchman circuit-breaker, 737
W. & G. electric novelties, 609
Westinghouse starters, Some new, 172
Weston miniature precision instruments, 737
Willans rotary air-pumps, 491
"Wireless" cable tester, The, 726
Witton-Kramer pedestal grinder, 609
Zelisko moving-coil relay, 372

Newfoundland, Trade statistics of, 472
New York Edison Co., The, 422
" York's largest turbine, 600
" Zealand, 998
" Zealand trade, 441, 472, 719
Nitrates by the direct electrolysis of peat deposits, The production of, by G. Dary, 1,020
Nitrogen, The extraction of atmospheric, 187
Nobel prizes, 794
Nomenclature and definitions of magnetic and electrical quantities, The, 632
Non-technical general manager, working under, by "Axon," 165
Northampton Engineering College, Engineering Society, 754
" Institute, 966
North-East Coast Institution of Engineers and Shipbuilders, 754
" -West U.S.A., Power conditions in, 881
Norway, 333, 782, 824, 953
" during 1912, The electrochemical and metallurgical industry in, 289
" Electrical manufacturing in, 571
" Hydro-electric works in, 242
Norwegian hydro-electric plant, A, 790
Nottingham Universal Exhibition, 1914, 428, 987
Novel construction in electric winding gear, A, 722

OBITUARY—
Abbey, R., 1,042
Apps, Alfred, 226
Aron, H., 466
Bailey, Sir W. H., 883
Brown, F., 268
Brown, T. E., 24
Calissano, Signor, 506
Cawthra, J. H., 623, 713
Chamberlain, A., 669
Coulson, W. W., 924
Cross, G. S., 1,042
Cushing, T., 796
Diesel, Dr. Rudolf, 547
Douglas, W. H., 429
Duffy, J., 1,042
Ebbs, Councillor Alfred, 466
Falk, S., 924
Giles, A. S., 713
Gotch, Prof. Francis, 146
Grover, J., 623
Hargreaves, C. T., 387
Hind, R., 106
Howden, J., 884, 920
Hunter, Sir R., 796
Jacques, H. S., 387
Jeans, J. S., 226
Krauss, A. W., 669
Lemon, John, 968
Lickfold, J. E., 883
Malden, Mr., 713
Melhuish, William Francis, 106
Milne, F.R.S., Prof. John, 226
Milnes, G. F., 586
Philips, J. E. J., 586
Preece, K.C.B., F.R.S., Sir William, 788
Ross, J., 586
Sandford, E. A., 226
Sankey, J., 796
Shaw, Charles, 429
Shaw, Joshua, 24
Simon, Dr. Henri, 968
Smith, Thos., 836
Sykes, Ernest, 24
Thom, W., 307
Thomson, T. Frame, 547, 586, 836
Von Voith, Dr. Friedrich, 68
Wilkins, J. W., 1,042
Williams, A. D., 307
Wyllie, R., 796

OFFICIAL RETURNS—
A E. G. Electrical Co. of South Africa, Ltd., 347
Aero Fire Alarm, Ltd., 388, 884
African Direct Telegraph Co., Ltd., 188
Ajax, Ltd., 467
Alderley and Wilmslow Electric Supply Co., Ltd., 24
Anchor Cable Co., Ltd., 188
Aron Electricity Meter, Ltd., 347
Atlas Electrical Co., Ltd., 884
Babcock & Wilcox, Ltd., 188
Brettell, J. W., Ltd., 347
Bridgwater and District Electric Supply and Traction Co., Ltd., 147
Brilliant Arc Lamp & Engineering Co., Ltd., 884
Brisbane Electric Tramways Investment Co., Ltd., 147
Bristol Tramways & Carriage Co., Ltd., 307, 388
British Continental Electricity Co., Ltd., 624
" Empire Lighting and Construction Co., Ltd., 624, 756
" Insulated & Helsby Cables, Ltd., 147
" Thomson-Houston Co., Ltd., 269
" Westinghouse Electric and Manufacturing Co., Ltd., 269
" Westinghouse Engineers' Club, Ltd., 307, 347
Brook, E., Ltd., 755
" Hirst & Co., Ltd., 147
Brown & Parsons (1913), Ltd., 755
Buenos Ayres City & Suburban Tramways, Ltd., 24
Cable Accessories, Ltd., 467
Cape Electric Tramways, 1,049
Chile Telephone Co., Ltd., 547
Church Stretton Electric Supply Co., Ltd., 1,049
City of Las Palmas Water and Power Co., Ltd., 147
Clark, Stevenson & Co., Ltd., 624
Cleveland and Durham Electric Power, Ltd., 624, 756, 1,049
Clones Electric Light and Power Co., Ltd., 347
Dacolight Engineering Co., Ltd., 147
Dartmoor Electric Supply Co., Ltd., 467
Dent & Co. & Johnson, Ltd., 756

OFFICIAL RETURNS—*continued.*
D. P. Battery Co., Ltd., 467
Drake & Gorham, Ltd., 1,049
Eastern Telegraph Co., Ltd., 797
Edison & Swan United Electric Light Co., Ltd., 1,049
Egham and Staines Electricity Co., Ltd., 147
Electric and General Investment Co., Ltd., 624
Electric Construction Co., Ltd., 547
Electric Ignition Co., Ltd., 547
Electric Law Press, Ltd., 836
Electrical Co., Ltd., 624
Electrical Engineering and Motor Co. (Carlisle), Ltd., 24
Electrical Oil Refining Co., 624
Electrical Power Storage Co., Ltd., 269, 547
Electro-Metals, Ltd., 1,049
Electromobile Co., Ltd., 25, 147, 467, 755
Ennig Electric Light and Power Co., Ltd., 467
Exchange Telegraph Co., Ltd., 25, 624
Foster Engineering Co., Ltd., 307
Frankenburg, I., & Co., Ltd., 147
Frinton-on-Sea Electric Light and Power Co., Ltd., 624
General Accessories Co., Ltd., 547
General Electric Co., Ltd., 624
Gent & Co., Ltd., 756
Greatrix, S., Jun., & Bro., Ltd., 147
Greystones Electric Light and Power Co., Ltd., 884
Halifax and Bermudas Cable Co., Ltd., 624
Harvey Electro-Chemical Co., Ltd., 187
Haseler & Sons, Ltd., Charles, 756
Helsby Wireless Telegraph Co., Ltd., 147
Henley's (South Africa) Telegraph Works, Ltd., 624
Hewson Manufacturing Co., Ltd., 269
Hirst, A., & Son, Ltd., 347
Hong Kong Tramways Co., Ltd., 467, 969
Honiton and District Electric Supply Co., Ltd., 836
Hulett, D., & Co., Ltd., 467
Jackson, J., & Co., Ltd., 467
Jandus Arc Lamp and Electric Co., Ltd., 836
Javal Patents, Ltd., 1,049
Keighley Electrical Engineering Co., 1,049
Keith & Blackman Co., Ltd., James, 25, 188, 624, 755, 836
Lamplough & Son, Ltd., 147
La Plata Electric Tramways Co., Ltd., 624
Laycock, W. S., Ltd., 547
Lea, Son & Co., Ltd., 147, 307
Llanelly Motor and Electrical Engineering Co., Ltd., 307
Llangefni Electric Light and Power Co., Ltd., 797
Lobito, Benguella & Catumbella Electric Light and Power Co., Ltd., 388
Malaga Electricity Co., Ltd., 624
Manaos Tramways and Light Co., Ltd., 755
Marbro, Ltd., 307, 756
Marconi International Marine Communication Co., Ltd., 547
Merthyr Electric Traction and Lighting Co., Ltd., 467
Midland Electric Corporation for Power Distribution, 307
Mitchell & Co., Ltd., F. L., 755
Montreal Tramways and Power Co., Ltd., 25
Musselburgh and District Electric Light and Traction Co., Ltd., 188
Nairobi Electric Power and Lighting Co., Ltd., 624
National Conduit and Cable Co., Ltd., 797
Naylorgraph, Ltd., 147
Newcastle-upon-Tyne Electric Supply Co., Ltd., 669, 797
New Liverpool Rubber Co., Ltd., 797
New Phonopore Telephone Co., Ltd., 926
Newton's, Ltd., 884
Northwood Electric Light and Power Co., Ltd., 926
Omega Electric Lamp Co., Ltd., 347
Paignton Electric Light and Power Co., Ltd., 547
Parsons, W., & Co., Ltd., 467
Pernambuco Tramways and Power Co., Ltd., 388, 884, 969
Perth Electric Tramways, Ltd., 269
Pirelli, Ltd., 884
Power Plant Co., Ltd., 756
Priestman Bros., Ltd., 307
Radium Electro-Emanation Co., Ltd., 624
Rangoon Electric Tramway and Supply Co., Ltd., 884
Rawlings Bros., Ltd., 925
Reason Manufacturing Co., Ltd., 188, 969
Reno, Ltd., 624
Renton, Holdsworth & Co., Ltd., 269
Rhondda Tramways Co., Ltd., 669, 925, 1,049
Rural Electricity Supply Co., Ltd., 624
Sheerness and District Electric Power and Traction Co., 624, 884
Shipston Electrical Co., Ltd., 756
South American Light and Power Co., Ltd., 797
South London Electric Supply Corporation, Ltd., 25

OFFICIAL RETURNS—*continued.*
Spagnoletti, Ltd., 467
Spensers, Ltd., 624
Stevens, W. A., Ltd., 836
Thompson Bros. (Blackburn), Ltd., 147
Tubes, Ltd., 624
Varley Magnet Co., Ltd., 624, 755
Vaughan & Co., Ltd., T. W., 25
Venner Time Switches, Ltd., 187
Walton & Clough, Ltd., 756
Wellingborough Electric Supply Co., Ltd., 669
West, Allen, & Co., Ltd., 467
Weston, Ltd., & Son, G., 755
White, J. G., & Co., Ltd.
Woking Electric Supply Co., Ltd., 1,049
Woodbridge and District Electric Light Co., Ltd., 147
Yale Electric Power Co., Ltd., 797

Oil-switch fire, A disastrous, 648
Oils, The drying and purifying of insulating, 644
Olympia Motor Show, The, 814
Operatic Society, B.T.H., 1,005
Oscillograph, An electrostatic, 807
Osram and Robertson Club, The, 583
Outdoor air-break switchgear, by W. A. Coates, 1,043
Outings, Annual sports and, 22, 67
Outer globes on the life of metal-filament lamps, The effect of, 471, 545
Over-production, Some results of, 263
Ozone, 1,040
,, and public health, 1,024
,, The effects of, 684

PALACE of Varieties, Manchester, The, 967
Palestine, 333
"Paragon" petrol-electro-mechanical transmission system, The, 78, 185
Paris Motor Exhibition, Electrical vehicles at the, 796

PARLIAMENTARY—
Bradford Corporation Bill, 13
Brighton Corporation Bill, 66
City & South London Railway Bill, 96
Hove Corporation Bill, 13
Metropolitan Electric Tramways (Railless Traction) Bill, 96
Metropolitan Railway Bill, 96, 226
Mexborough and Swinton Tramways Bill, 96
Post Office (London) Railway Bill, 13
Rhondda Tramway Bill, 96
Royal Assent, 66, 305
Western Valleys (Monmouthshire) Railless Electric Traction, 12
Parsimony, Municipal, 2
Parsons turbine for Chicago, The 854, 871
Passive state of metals, The, 1,015
Patent action, A Belgian, 144
,, applications, 32, 52, 175, 655, 909, 998
,, cases, Special courts for, 643
,, Law, American, 193
,, litigation in America, 668
,, notices, 865
,, restorations, 253, 334, 983
,, Tungsten lamp, 834
Patents in Austria, Wire lamp, 1,035
Payment by instalments, 891
Peat as station fuel, 1,400
,, deposits, The production of nitrates by the direct electrolysis of, by G. Dary, 1,020
Peking Legation machinery, The, 395
Pelton wheel, An interesting 3,000 h.p., 471
Periodic Law, The radio-elements and the, by F. Soddy, 632
Personal control, 321
Petrol car misnamed? Is the modern, 899
,, electric 'buses: transmission strains and operating costs, 249
,, electro-mechanical transmission system, The "Paragon," 78, 185
Phœnix mining machinery, 374
Philippine Islands, 333
Physical Society's Exhibition, 922, 1,008, 1,031
Physikalisch-technische Reichsanstalt, Charlottenburg, in 1912, The electrical work at the, by E. S. Hodgson, 356
Pictures and trade expansion, Moving, 1,021
Piecework and bonus systems of wages payment, by "Zahler," 204
"Pinch Effect" electric furnace, Demonstration of the Hering, by Dr. Carl Hering, 79
Pirelli works at Southampton, The, 998
Pladuram wire, 923
Plant, An emergency, 23
Plugs, Standardisation of, 890
"Point Five Association," The, 22, 38, 711
Poisoning, Lead, 73, 668, 835
Pole, South Magnetic, 345
Popularise electricity, To, 897
Porous accumulator plates, 834
Post Office Telegraph and Telephone Society of London, 882
Powell saccharine process for seasoning and preserving timber, The, by R. E. Neale, 444
Power conditions in North-west U.S.A., 881
,, development, The Keokuk, 398
,, for loading and stacking coal, Electric, 86
Power stations, Load factors in large, 697
,, stations, Steam boiler working in electrical, by J. W. Jackson, 779, 853, 890
,, transmission at collieries, 765
,, transmission in the Baltic, Submarine, 61
Preece, Sir William, by Sir John Gavey, 789
Prentice automatic system of wireless train control, The, 343
Press, The prestige of the, 712, 854
Pressure regulation, by C. Turnbull, 364
,, rises, by W. Duddell, 814, 892, 978
Price reductions, Tungsten lamp, 497
Prices, German telephone, 781
,, Publication of contract, 811
Printing press work, Adjustable speed alternating-current motors for 819
Private arrangements, 213, 374, 457, 568, 653, 781, 865, 952, 1035
,, installation, The, 207, 266

PROCEEDINGS OF SOCIETIES AND INSTITUTIONS—
Association of Consulting Engineers, 119
Agriculture and life, Aplication of electricity to, by T. T. Baker, 1,015
Boiler working in electrical power stations, Steam, by J. W. Jackson, 779, 890
By-product, Electricity as a, by R. J. Spencer-Phillips, 845
Cables for mining work, copper and aluminium, by Burkewood Welbourn, 117
Cities, The electricity supply of large, by Prof. G. Klingenberg, 1,060
Collieries, Power transmission at, by W. H. Telfer, 765
Consulting engineers, Association of, 119
Cooking, Electric, by W. H. Alabaster, 451
Cooling gas engines, A new method of, by Prof. Bertram Hopkinson, 172
Demonstration of the Hering "Pinch effect" electric furnace, by Dr. Carl Hering, 79
Electricity as a by-product, by R. J. Spencer-Phillips, 845
,, supply of large cities, The, by Prof. G. Klingenberg, 1,060
,, to agriculture and life, Application of, by T. T. Baker, 1,015
Electrostatic oscillograph, An, by H. Ho and S. Koto, 807
Electrostatic system for the measurement of power, The use of the, by C. C. Paterson, E. H. Rayner, and A. Kinnes, 125
Faraday Society, 79
Furnace, Demonstrations of the Hering "Pinch effect" electric, 79
Gas engines, A new method of cooling, by Prof. Bertram Hopkinson, 172
I.E.E. (Dublin Local Section), Address by J. M. Harriss, 849
,, (Manchester Local Section), Address by Prof. E. W. Marchant, 764
,, (Newcastle United Section), Address by C. Vernier, 693
,, (Scottish Local Section), Address by J. A. Robertson, 848
,, students' tour, 1913, 210
,, (Yorkshire Local Section), Address by W. B. Woodhouse, 809
,, (Western Local Section), Address by H. Faraday Proctor, 696
Induction furnace, The electric refining of steel in an, by Otto Frick, 411
Insulation resistance, The characteristics of, by S. Evershed, 894, 934, 981, 1,016
Measuring machine, An electrical, by Dr. P. E. Shaw, 127
Meters, The British Standard Specification for consumers' electric supply, by S. H. Holden, 810, 850, 1,032
Oscillograph, An electrostatic, by H. Ho and S. Koto, 807
Passive state of metals, The, 1,015
Power stations, Steam boiler working in electrical, by J. W. Jackson, 779, 890
,, transmission at collieries, by W. H. Telfer, 765
Pressure rises, by W. Duddell, 892, 978
Resistance, The characteristics of insulation, by S. Evershed, 894, 934, 981, 1,016
Rises, Pressure, by W. Duddell, 892, 978
Specification for consumers' electric supply meters, The British Standard, by S. H. Holden, 810, 850, 1,032
Standard Specification for consumers' electric supply meters, The British, by S. H. Holden, 810, 850
Tariff system without time-operated control, A two-rate, by H. H. Ferry, 821

PROCEEDINGS OF SOCIETIES AND INSTITUTIONS—*continued.*
Tungsten lamps of high efficiency, by I. Langmuir and J. A. Orange, 698, 763
Two-rate tariff system without time-operated control, A, by H. H. Perry, 821
Wind-power for the generation of electrical energy, by W. H. Myers, 210

Production Managers' Association, 66
,, of steel, 711
Proportion, The value of a sense of, 729
Proposals for Parliament to consider, New electrical, 933
Propulsion, Electric marine, by John Reid and H. A. Mavor, 79

PROSPECTUSES—
Bell Telephone Co. of Canada, 549
Bristol Tramways & Carriage Co., Ltd., 149
British Columbia Electric Railway Co., 589
,, Electric Heater Co., 885
Buenos Ayres Lacroze Tramways Co., 589
Calgary Power Co., 1,049
Cleveland and Durham Electric Power, 589
Compania de Electricidad de la Provincia de Buenos Ayres, 969
Electrical Apparatus Co., 25
Fuller Accumulator Co., 757
Georgia-Carolina Power Co., 25
Humphrey Pump Co., 25
Newcastle-upon-Tyne Electric Supply Co., 626
Ozonair, 757
Portarlington Electric Light & Power Co., 885
Rangoon Electric Tramway & Supply Co., 797
South Staffordshire Mond Gas (Power and Heating Co.), 1,009
Tramways, Light & Power Co., 1,009
United Electric Tramways of Monte Video, 797
,, Salt & Power Co., 149
Vancouver Power Co., 589
Waygood & Co., R., 149
Whitstable Electric Co., 1,009

Protection of engineers, 42
,, of ships' hulls, The electrical, 636
Prussian railways, Accumulator traction on, 200
Public health, Ozone and, 1,024
,, in the use of light, Educating the, 77
,, service, Salaries in, 163
Publicity expenditure, L.G.B. and electrical, 882
Pump, An electrically-operated fire, 569
Purchase date, London Electric Supply Companies and the, 835, 882

QUANTITATIVE and qualitative heating, 642
Queenstown (Cape Colony) Electric Lighting, 60

RADIATIONS, Absorption of wireless, 122
Radio-elements and the periodic law, The, by F. Soddy, 632
,, -elements as indicators in chemistry and physics, by G. Hevesy, 679
,, -elements, The chemistry of the, by A. Fleck, 633
,, telegraphic investigations, 595
,, elegraphy and telephony, High-frequency alternators and their use in, 433
,, -telegraphy, and the mode of their propagation, The nature of the electromagnetic waves employed in, by Prof. G. W. O. Howe, 486
,, telegraphy, Multiplex, 833
Radium, British, 668
,, purchase, 753
,, standard, British, 905
,, supply, New, 939
,, therapeutics, 851
Railway accident, 754
,, accident, The Aisgill, 426, 443, 478, 556
,, American, 345
,, battery cars, 531
,, collision, The Melun, 736
,, locomotion, The internal-combustion engine applied to, by F. W. Lanchester, 451
Railway, Electrical locomotives of the Lötschberg, 339

RAILWAY NOTES—
Argentine, 703, 868
Australia, 135, 418, 575, 614, 829, 913
Austria, 178, 297, 377, 575, 657, 709, 957
Bakerloo Tube, 869
Barnoldswick, 536
Birmingham, 461
Brazil, 536
Canada, 297, 423, 501, 703, 785, 1,037
Chile, 216, 829
Colne, 216
Crystal Palace Tube, Proposed, 703
Dartford, 377
Denmark, 829
Dundee, 575
East Kent, 136
Edinburgh, 575
Flintshire, 537
France, 615, 745

RAILWAY NOTES—*continued.*
Germany, 56, 336, 377, 423, 537, 703, 785, 829, 868, 1,002
Glasgow, 56, 216, 502, 537
Grimsby, 957
Haslingden, 575
Heywood, 575
Holcombe Brook (Lancs.), 216
Holland, 56
Hungary, 423, 745
Italy, 216, 297, 377, 575, 829
Japan, 57, 136, 423, 462, 658, 745
Leeds, 575
Leicester, 575
London, 19, 257, 378, 575, 658, 703
Metropolitan District Railway, 19
Nelson, B.C., 501
North Staffs., 659
„ Yorkshire, 958
Poland, 1,002
Quarry Bank, 745
Russia, 178, 378, 575, 614, 868, 913
Scotch mountain railway, A, 378
South Africa, 298, 576
Spain, 377, 658, 868
Swansea, 136
Switzerland, 135, 336, 575, 745, 785, 957
Turkey, 575
Tyne tunnel proposal, 786
U.S.A., 378, 424, 1,002, 1,037
West Sussex, 576

Railway rates in connection with the electrical trade, Increase in, 209
„ signals and mercury vapour lamps, 506
Railways, Accumulator traction on Prussian, 200
„ Light, 711
Rand, Electric blasting on the, 921
„ Licensing electricians on the, 835
„ The strikes on the, 23
„ Thunderstorms on the, 173
„ Variable-speed "cascade" winders on the, 992
Rating of electrical machinery, The, 557
„ of tramways, The, 201
Recording instruments, Some new forms of, 245, 268
Records, Cable laying and, by "W. E. H.," 111
„ Remarkable motor, 564, 778
Refining of steel in an induction furnace, The electric, by Otto Frick, 411
Regulation, Pressure, by C. Turnbull, 364
Reminiscences of the misty past, by G. A. Nussbaum, 636
Remarkable motor records, 564, 778
Remote-reading hygrometer, A, 518
Report, Electrical accidents in 1912: Mr. G. Scott Ram's, 13, 74, 116
Research, Industrial, 941
„ in the United States, Electrical, 427
Resistance, Insulation, 855
„ The characteristics of insulation, by S. Evershed, 894, 934, 981, 1,016
Results obtained from active electric cooking campaign, 304
„ of over-production, Some, 263
Resuscitation from electric shock, 199

REVIEWS—
Application of electric power to mines and heavy industries, by W. H. Patchell, 976
Applied mechanics, by A. Jamieson, 865
Baudot printing telegraph system, The, by H. W. Pendry, 158
Car troubles, by H. W. Slanson, 192
Design and construction of steam turbines, by Harold Medway Martin, 14
„ of alternating-current machinery, The, by J. R. Barr and R. D. Archibald, 235
Dynamo and motor attendants and their machines, by F. Broadbent, 909
Dynamo laboratory outlines for students in electrical engineering, by J. F. Wilson, 439.
Electric lighting, by W. S. Franklin, 1,028
Electrical engineering for mechanical and mining engineers, by N. J. S. Heather, 157
„ machine design, by A. Gray, 278
Electricity and its practical applications, by Magnus Maclean, 278
„ for everybody, by R. Borlase Matthews, 878
„ for the farm and home, by F. Koester, 476
„ in mining, by Siemens Bros. Dynamo Works, Ltd., 438
Engineering as a profession, by A. P. M. Fleming and R. W. Bailey, 879
„ tables and data, by W. W. F. Pullen, 97
English and German technical terms, by J. G. Horner, 782
Essentials of electricity, by W. H. Timble, 235
Experimental wireless stations, by P. E. Edelman, 976
Fire protection in buildings, by H. G. Holt, 345
General directions for the use of electric cooking stoves, by Mrs. W. T. A. Cross, 654

REVIEWS—*continued.*
Graphs in a cable-ship drum-room, by E. Raymond-Barker, 907
Hand-book of structural steelwork, by the Technical Staff of Redpath, Brown & Co., Ltd., 676
High and low-tension switchgear design, by A. G. Collis, 476
Ideal code condenser, The, by A. Kolkenbeck, 879
Introductory electricity and magnetism, by C. W. Hansel, 438
Laboratory manual of alternating currents, A, by Prof. J. H. Morecroft, 14
Liquid air, Oxygen, Nitrogen, by G. Claude, 291
Logarithms for beginners, by C. N. Pickworth, 97
Management of public electric supply undertakings, by A. Hugh Seabrook, 908
Manual of electrical undertakings and directory of officials, by Emile Garcke, 97
Mechanical World Electrical Pocket Book for 1914, 1,035
„ *World* Pocket Diary and Year Book, 1914, 826
Methods of measuring electrical resistance, by Edwin F. Northrup, 114
Modern bioscope operator, The, 97
National form of building contract, by W. Valentine Ball, and W. H. Hope, 438
Newspaper, The, by G. Binney Dibblee, 174
New steam tables, together with their derivations and applications, The, by Prof. C. A. M. Smith, and A. G. Warren, 15
Oil, by W. Antrobus, 677
Physikalische grundlagen der elektrotechnik, by Dr. F. F. Martens, 235
Practical alternating currents and alternating-current testing, by C. F. Smith, 396
Practical Engineer Pocket Book and Diary for 1914, 1,035
Prüfungen in elektrischen zentralen, by Dr. E. W. Lehmann-Richter, 344
Psychology and industrial efficiency, by Hugo Munsterberg, 113
Radioactive substances and their radiations, by E. Rutherford, 236
Recherches experimentales sur le coupage des fers et aciers par les chalumeaux à jet d'oxygène, by R. Amédés, 826
Reinforced concrete, Second report of the Committee, 826
Repayment of local and other loans, Sinking funds, The, by E. H. Turner, 157
Report of the Committee on Electrical Standards, 396
Resuscitation, by C. A. Lauffer, 397
Single-phase commutator motors, by F. Creedy, 292
Soudure autogène, La, by l'Institut Scientifique et Industriel, 826
Switches and switchgear, by Prof. R. Edler, 907
Switchgear and the control of electric light and power circuits, by A. G. Collis, 977
Teaching of electric light switching, 654
Télégraphie et la téléphonie simultanées, et la téléphonie multiple, La, by K. Berger, 279
Telephonie ohne Draht, Die, by Dr. K. Markau, 676
Theory and calculation of electric currents, by J. L. La Cour and O. S. Bragstad, 291
Universal directory of railway officials, 1913, 213
Uses of electricity, The, 97
Wade's tables for wooden poles, 97
Wechselstromarbeitsdiagramme, by Emil Waltz, 397
Wireless telegraphy, by C. L. Fortescue, 344
Wiring diagrams of electrical apparatus and installations, 344
Working of steam boilers, The, by E. S. Hiller, 1,029
Year-book of wireless telegraphy and telephony, 97

Rhymney Railway, Electrical train dispatching on the, 388
Rifle League, Electricity Supply, 66, 144, 187, 225, 795, 833, 1,006
Rights of sub-contractors, 766
Rings in lead, 185
Rolling-mill motors, The cooling of, 99
Royal Institution, 754
„ Society, 794, 966
Rubber, 203, 294, 402, 522, 652, 770, 898
„ Exhibition in London, 99, 170
„ plant, A new, 393
„ prices, 125
Rules for insulated conductors, 360
Rushmore electric engine starter, The, 1,027
Russia, 699
„ as a trade outlet, 374
„ British trade with, 1,022
„ German enterprise in, 835
„ Strike in, 386, 457, 539
„ Tramcars for, 1,095
Russian railway lighting proposal, 668

SACCHARINE process for seasoning and preserving timber, The Powell, by R. E. Neale, 444
St. Paul's Cathedral, The lightning conductors of, 399
Salaries in public service, 162
Salford Technical and Engineering Association, 711
Salt Union Works, Electrification of the, 379
San Francisco, 1915, International Electrical Congress, 48
„ Francisco Exhibition, 213
School lighting, 385, 940
Science and industry, 1
Scottish Electrical Contractors' Association, 66
Sealing electrical conductors through glass, by J. S. Anderson, 633
Seasoning timber electrically, 320
Selenium, On the minimum quantity of light discoverable by means of, by E. E. Fournier D'Albe, 489
Sheffield, Electric steel furnaces in, 154
„ electrical workers' wages, 66
„ Fuel, Light and Power Exhibition, 428, 721
Shipping Exhibition, 825
Ships' hulls, The electrical protection of, 636
Shock, Resuscitation from electric, 199
Shop lighting on the hire system, Outside, by "Interested," 33
„ lighting, Points in, 519
„ order systems, Works, by A. E. Brewerton, 1,088
Shops' Act, The, 249, 294, 569, 640, 658
Siberian wireless station, A, 59
Sign business, Electric, 457
Silite and its uses in science and industry, 194
Single-phase A.C. motors, Adjustable-speed, 922
Sleet loads, Formulæ for estimating, 763
Small electric light and power undertakings, by H. P. Girling, 963
Smelting of iron ore, Electric, 1,064
„ of tin ore, 146
Smoke abatement, 24, 593
South Africa, 569
„ African Customs invoice regulations, 824
„ African trade, 361, 370, 386
„ America, Swiss enterprise in, 998
„ magnetic pole, 345
Spain, Electrical Exhibition in, 98
„ German lamp factory in, 998
„ Lamp works in, 334
„ Swiss exports to, 1,029
Spanish amalgamation, A, 532
„ Commercial Museum, 415
Specification, An arbitrary, 163
„ for consumers' electric supply meters, The British standard, by S. H. Holden, 810, 850, 1,033
Staff Engineers' Association, The, 427, 939
Staircase lighting control, Improved automatic, 288
Standard of light, The electric arc as a, by J. F. Forrest, 678
Standardisation of electric lamps for motor-cars, 637, 711
„ of plugs, 820
Standards for use in electrical measurement, Practical, 489
Starter, The Rushmore electric engine, 1,027
Station Engineers, Association of Electrical, 267, 345, 465, 545, 584, 711, 754
Steel chimney, Fall of a, 464
„ Electrical production of, 711, 1,006
„ furnaces in Sheffield, Electrical, 154
„ in an induction furnace, The electric refining of, by Otto Frick, 411
„ Works, at Seraing, Belgium, The electrical plant at the Cockerill, 267
„ works, New, 175
Steels, The electrical heat treatment of tool, 251
Sterilisation by ultra-violet rays, water, 516
„ of milk, The electrical, 1,023
Sterling Telephone Co.'s new offices, 750
Straits Settlements, 1912, Trade statistics of the, 818
Street lighting, 427, 598
Strikes, 267, 345, 546, 967
„ at Schenectady, 910, 960, 1,041
„ ended, Bedford, 105
„ in London, The, 387, 428
„ in Russia, Electric workers', 386, 457, 539
„ The Moulders', 905, 464, 992
„ The Swansea, 144
„ on the Rand, The, 23
Stuart Street Station, Manchester, Recent developments at, 35
Sub-contractors, The rights of, 766
„ -station attendants at Hull, 585
„ -stations, by "W. E. H.," 677
Submarine power transmission in the Baltic, 61
Submarines, Driving systems for, 225
Supply charges, Electricity, by "A. W. B.," 197
Swan, F.R.S., Sir Joseph, 749
Sweden, 783, 823
„ Electrochemical works in, 881
„ Trade statistics of, 517
Swedish exports of electrical goods, 651
Swiss enterprise in South America, 998
„ exports to Spain, 1,029
„ imports of electrical machinery, 611
Switchgear, Outdoor air-break, by W. A. Coates, 1,043

TANNING at Burton-on-Trent, Electro-, 781
Tariff, Italian, 692
„ revision, U.S., 740
„ system without time-operated control, A, by H. H. Perry, 891
Tariffs on electrical goods, Foreign and Colonial, 119, 159, 240, 280, 319, 359, 480, 519, 559, 599, 683, 811, 852, 895, 983, 1,063
Tax, The German lighting appliances, 1,026

TELEGRAPH NOTES—
Africa, 537
Argentina, 257, 424
Australia, 136, 424, 704
Bahamas, 462
Barbados, 424
Barnsley, 103
Belgium, 576, 958
Birmingham, 424
Boy Scouts and wireless telegraphy, 58
Brazil, 102, 337
Cable cession, 103
Cable expedition, A, 20
Cable rates, 257
Canada, 502, 537, 704
Colonial wireless stations, 103
Communication with trains, 1,003
Fishguard, 615
French Indo-China, 830
„ wireless proposals, 217
German Colonies, 103
Germany, 217, 218, 424, 869, 914, 958
Goldschmidt system, The, 58, 462
Hand-writing by wire, 786
Imperial communications, 136, 178
„ wireless system, 20, 58, 103, 136, 183, 217, 786
International Conference, 830
„ Time Congress, 704
„ Wireless Commission, 704
„ wireless telegraphy, 659
Italy, 217, 424, 538
"Jamming" in Naval manœuvres, 178
Japan, 462, 787, 870
Johnson-Varley system, 787
Landing licence, 576
London clocks, 258
Long-range wireless, 914
Marconi libel action, 20
„ patents, 298
„ strike, 424
„ wireless rescue, 615
Mexico, 870
Mongolia, 137
Morocco, 502, 848
New cable, 20, 337, 615, 704, 958, 1,003, 1,037
„ French cable steamers, 424
„ Zealand, 576
Norway, 20, 746, 830, 958
Norwegian Marconi station at Stavanger, 257
Pacific cable, The, 576
Panama canal, 830
Postal servants, 218, 298, 424, 502, 576, 895, 914, 1,003
„ telegraphs and telephones, 659
Poulsen system, 20, 178
Russia, 298, 538, 870, 914
St. Kilda, 178
Severn tunnel, The, 576
Siberia-Alaska, 298
Spain, 258, 615
State-owned cables, 787
Stonehaven, 103
Submarine cables and trawlers, 538
Swansea, 914
Telegraph rates, 337, 424
„ -telephone Combine, 870
Telewriter Exchanges, 425
Train control, 502
Trans-Atlantic wireless telegraphy, 103, 746
United States, 577, 615, 704, 914, 1,037
U.S.A. high frequency patents, 914, 958
Uruguay, 218
War Office and the Poulsen system, The, 137
West Indies, 1,037
Wireless amateurs, 502, 787, 831
„ Commission, 615
„ heroes, 831
„ in cargo vessels, 659
„ in fishing, 914
„ litigation, 103
„ on board ship, 704
„ on trains, 870
„ rescue, 704
„ strike, 462
„ telegraph research, 787
„ telegraphy on salvage vessels, 787
„ telephony, 787
World wireless, 746

TELEPHONE NOTES—
Anglo-French telephony, 704, 746
„ -Swiss telephony, 869
Argentina, 217, 830
Australia, 178, 538
Austria, 58, 870, 914, 1,003
Automatic telephone service, 830
Belgian-Swiss telephone service, 424
Berlin-Rome telephone, 502
Betulander automatic telephone system, 20

TELEPHONE NOTES—*continued.*
Birmingham, 659
Brazil, 20
Canada, 217, 870, 1,037
Canadian farm telephones, 298
Communication with trains, 659
Dublin, 914
France, 538
Germany, 298, 1,003
Holland, 870
Hull, 870, 914, 958
Ireland, 958
Isle of Man, 337, 502
Italian telephone project, 298
Japan, 20, 217, 337, 615, 870
London-Paris telephone, 20
Long distance telephony, 659, 1003
New cable, 787, 1,037
Paris telephone system, The, 306, 337
Post Office Telephone and Telegraph Society of London,, 704, 1,003
Postal telegraphs and telephones, 659
Railophone system, 787
Richmond, 830
Severn tunnel, The, 576
Sheffield, 424
Telegraph-telephone combine, 870
Telephone corruption, 424
" finance, 258
" payments, 298
" rentals, 746
" service, The, 41, 58, 103, 1,003
" transfer, The, 58
" wires cut, 337
Telephony in mines, 425, 462, 537
Trans-continental telephone, 298
Trunk telephone, 337
U.S.A., 218, 1,037
Vancouver submarine telephone cable, The, 298
Venezuela, 298
Wireless telephony, 337

Telephone call office out at sea, A, 159
" prices, German, 781
" service, "Our," 41
Telephony, High-frequency alternators and their use in radio-telegraphy and, 433
Temperature limits, 521
Terminology, Electrical, 601
Terrestrial magnetism, 600
Thunderstorms on the Rand, 173
Timber electrically, Seasoning, 320
" The Powell saccharine process for seasoning and preserving, by R. E. Neale, 444
Timbers, Value of kyanising in the preservation of various pole, 906
Time service, Electric, 753
" signals, 427
" signals and taxation, Wireless, 761
" signals, International, 144
Timing watt-hour meters, 233
Tin ore, Smelting of, 146
Traction abroad, Electric, 632
" Main-line electric, by Prof. Gisbert Kapp, 448
Trade, Australian, 602, 731
" barometer, Electricity consumption as a, 196
" Canadian electrical, 655, 688, 771
" expansion, Moving pictures and, 1,021
" Foreign, 67, 266, 464, 585, 794, 966
" How Germany secures, 266
" in Germany, 346, 496
" in Greece, Electrical, 824
" names and trade descriptions, 247
" National Chamber of, 464
" New Zealand, 441, 472
" outlet, Russia as a, 574
" outlook in Canada, The, 820
" prospects in the Balkan States, 132
" South Africa, 361, 370, 386
" statistics of Australia, 932
" statistics of Italy, 234
" statistics of Japan, 1912, 198
" statistics of Mexico, 433
" statistics of Newfoundland, 472
" statistics of New Zealand, 719
" statistics of Straits Settlements, 1912, 818
" statistics of Sweden, 517
" Unions and co-partnership, by J. B. C. Kershaw, 632
" Union assistants and evening classes, 728
" with Canada, British, 44, 81, 114, 977
" with Russia, British, 1,022
" with the United States, 991
Traffic developments in Berlin, 322
" problem, The London, 281, 287
Tragic end of two aspirants to electrical knowledge, by Arnold Lewin, 1,019
Train control, Automatic, 618
" control, Wireless, The Prentice automatic system, 343
" dispatching on the Rhymney railway, Electrical, 988
" lighting, 363, 498
" lighting (see under "Aisgill")
" lighting, Vickers' patent S.B. system of, 406
Trains, Fireproof, 680
" Gas fires on, 465
Tramcar gear-wheels and pinions, 84
Tramcars for Russia, 1,035

TRAMWAY NOTES—
Aberdeen, 178, 256, 336, 461, 575, 745, 868, 913, 1,036
Acton, 336

TRAMWAY NOTES—*continued.*
Ambulances, Electric, 830
Argentina, 102, 216, 297, 418, 501, 657, 829, 913, 1,036
Ashton, 256, 297, 377, 418, 829
Ashton-under-Lyne, 336
Asiatic Turkey, 336, 785
Australia, 19, 53, 256, 336, 377, 501, 614, 657, 745, 913
Austria, 575, 913, 1,036
Ayr, 256, 461
Bacup, 256
Baildon (Yorkshire), 135, 868
Barking, 216
Barnsley, 703
Barton, 703
Batley, 336
Belfast, 216, 297, 461, 501, 913, 1,036
Bermondsey, 830
Birkenhead, 56, 135, 256
Birmingham, 56, 423, 536, 575, 703, 1,002, 1,036
Blackburn, 56, 256
Blackpool, 336, 423, 575, 868
Blaydon, 216
Blofield, 785
Bolton, 216, 501, 657, 703
Bournemouth, 102, 614, 785, 868, 1,002
Bradford, 56, 102, 178, 401, 537, 575, 614, 657, 703, 829, 913
Brazil, 56, 703
Brighouse, 913
Brighton, 216, 575, 1,002
Bristol, 418
Bulgaria, 957
Burnley, 536, 575, 745, 957
Bury, 178, 423, 657, 829, 913, 1,036
Camberwell, 102
Canada, 745, 957
Cardiff, 537, 657
Carshalton, 913
Castleford, 703
Chadderton, 501
Cheltenham, 657
Chesterfield, 829, 1,002
Chile, 102
China, 537, 703
Cleckheaton, 657
Colwyn Bay, 336, 1,036
Connah's Quay, 537
Coventry, 135, 868
Crewe, 256
Croydon, 19, 502, 1,037
Darlington, 297
Dartford, 136, 216, 256
Darwen, 377, 657
Dearne Valley, 502, 957
Deptford, 830
Dewsbury, 56, 216, 423, 745, 1,037
Doncaster, 256, 378, 423, 658
Dover, 462, 868
Dublin, 297, 336, 378, 423, 703
Dunfermline, 216, 297, 462, 658
Dundee, 256, 297, 378
Ealing, 102, 1,002
East Ham, 537, 868, 957
Edinburgh, 57, 102, 136, 216, 502, 614, 703, 745, 914
Edison 'bus, 957
Erith, 703
Fife, 423
Folkestone, 57
France, 377, 575, 957
Germany, 56, 868, 913
Glasgow, 57, 256, 336, 703, 786, 829, 868, 957
Gloucester, 216, 830
Gosforth-on-Tyne, 658, 745, 786
Greenock, 297, 462, 614, 703, 786
Halesowen, 57
Halifax, 256, 378, 537, 658, 703
Haslingden, 703
Heston and Isleworth, 216
Holland, 56
Hove, 56
Huddersfield, 136, 378, 658, 869
Hunslet, 378
Ilford, 102
India, 869
Italy, 135, 297, 537, 913, 957
Japan, 217, 703, 830
Keighley, 178, 336, 1,002
Lanarkshire, 537
Lancaster, 745
Leeds, 217, 257, 336, 378, 658, 703, 745, 786, 957, 1,003
Leicester, 615, 703
Leigh, 217, 957
Leith, 423, 502, 830
Leyton, 178
Lincoln, 957
Little Hulton, 19, 337
Liverpool, 178, 615, 658, 786, 957
London, 19, 57, 102, 178, 462, 703, 745, 830, 869, 914, 957, 1,003
Longbenton, 57
Longridge (near Preston), 337
Manchester, 136, 178, 257, 337, 423, 502, 615, 704, 958
Marylebone, 19
Mexboro', 19, 102
Mexico, 257
Middlesex, 19
Milngavie, 658
Morecambe, 102, 136, 337
Morley, 914
Mumbles, 462
Newcastle (Co. Down), 1,037
Newcastle-on-Tyne, 57, 378, 423, 502, 615, 658, 914, 958
Newport (Mon.), 704
New Zealand, 20, 257, 745, 914
Northampton, 136, 502, 914
Northwich, 869
Norwich, 869
Oakworth, 786
Oldham, 136, 378, 423, 615, 786
Oxford, 20, 102, 745, 786, 1,003
Paisley, 1,003
Preston, 178, 502, 537, 615, 869
Prestwick, 615

TRAMWAY NOTES—*continued.*
Quarry Bank, 745
Ramsbottom, 102, 297, 337, 615, 830, 1,003
Rawtenstall, 178
Reading, 102, 297, 830
Ripley, 257
Rochdale, 502
Rotherham, 102, 257, 745
Russia, 297, 575, 913
Ryton, 298
Salford, 20, 57, 136, 217, 423, 745 914
Sheffield, 423, 786, 914, 958
Shipley, 704, 869
South Africa, 502, 704, 958, 1,037
Southampton, 20
Southend-on-Sea, 136, 217, 337, 745, 830, 1,037
South Lancashire, 378, 869, 1,037
Southport, 502, 615
South Shields, 378, 537, 704, 786
" Yorkshire, 745
Spain, 537, 913, 1,002
Stalybridge, 20, 57
Stanley, 869
Stepney, 703 869
Stirling, 298, 424, 537, 830
Sunderland, 20, 746, 914
Swansea-Mumbles, 869
Swinton, 102
Sydney, 501
Tasmania, 298, 378
Teddington, 102
Todmorden, 745
Tottenham, 502, 830
Turkey, 297
Trafford Park, 615
Tunis, 786, 914
U.S.A., 217, 298, 786, 914
Walsall, 257, 537, 869
Walthamstow, 257, 869
Warrington, 20, 57, 424, 659
West Ham, 136, 502
" Hartlepool, 1,037
Westhoughton, 958
Whitby, 257
Whitworth, 298
Wigan, 378, 424
Wolverhampton, 786, 958
Wombwell, 378
Worsley, 462
York, 378, 424, 537, 615, 830

Tramway curves, by A. J. Bousfield, 405
" poles and its arrest, On corrosion on, by A. J. Bousfield, 676
" track as affected by Sec. 28 of the Tramways Act, 1870, The maintenance of paving on, by Councillor W. C. Fenton, 555
" workers' combine, 545
" workers' wages, 832
Tramways conference, The municipal, 427, 482, 505, 532, 553, 595
" The rating of, 201
Transformer manufacture, Economising, 733
Transformers, Increasing frequency by static, by S. M. Powell, 323
Transmission at collieries, Power, 765
" in the Baltic, Submarine power, 61
" lines patrolled by aeroplane, 922
" The "Paragon" system of electrical power, 78, 185
" towers, Losses in, 1,006
Transport, Urban passenger, by J. B. Hamilton, 595
Transvaal, Electric elevators in, 495
Travelling, The art of, by S. Wallace Wilkins, 805
Trenching through stone, 701
Troubles due to non-use of circuit-breakers, 76
Truck, An English-built electric, 342
" English experiments and American practice, The electric, 539
Tungsten lamps of high efficiency, 698, 702
" lamp patents, 894
" lamps, The new, 687
Turbine for Chicago, The Parsons, 854
" generator, A steam 30,000-k.w. 545
" New York's largest, 600
" The Ljungström radial-flow steam, 580
Turbines at Marylebone, High-speed, 917
Turbo-alternator, A 25,000 Parsons, 871
Turkey, The Black Gang in, 175
Twenty-five-thousand k.w. Parsons turbo-alternator, A, 871
Two-rate tariff system without time operated control, A, by H. H. Perry, 821
Tyne electrical engineers, 906
"Tynemount," The electrically-propelled cargo vessel, 505, 601, 629, 643

ULTRA-VIOLET Rays, 730
" -violet rays, Water sterilisation, by, 516
Underground mail tubes, 618
Underwriters, British inspection for the American, 69
Unemployment insurance, 899
United States, Trade with the, 991
U.S. tariff revision, 740
Units, New, 198
University education in London, 895
Urban passenger transport, by J. B. Hamilton, 595

VACUUM furnaces, Electric, 573
Variable speed "cascade" winders on the Rand, 992
Vehicle business in America, Further progress in the development of the electric, by Douglas Sutherland Martin, 45, 85
" charging load: A Canadian outlook, The, 244
" Committee, Electric, 921, 1,040
" in England, The electric, 705
" Openings for the electric, 967
" test, An electrical, 795
" The electric, by J. W. Beauchamp, 236
" trial, Electric, 1,006
Vehicles at the Paris Motor Exhibition, Electrical, 796
" Cheap American electric, 998
" Edison electric, 741
" Electric, 481, 496
" in Germany, Electrical, 931
" , New London showrooms for electric, 931
" The G.P.O. and electric, 233
Vickers patent S.B. system of train lighting, 406
Victorian Institute of Electrical Engineers, 186
"Vita" electric heater, The, 219
"Volt" in 1766, What was a, 697

WAGES at Nelson, Municipal, 286
" Australian electricians', 881
" movement, London electricians', 712, 796, 924, 1,008
" payment, Piecework and bonus systems of, by "Zahler," 204
" Sheffield electrical workers', 66
" Tramway workers', 832
Waste heat station, The first municipal, 162, 179
Water-power in Catalonia, Electric undertakings and, 1,030
" sterilisation by ultra-violet rays, 516
" supply for internal-combustion engines, by A. N. Rye, 164
Waterways, Inland, 811
" The improvement and unification of English, 678
Watt-hour meters, Timing, 233
"Weak-current" industries in Germany, The, 415
Weaving shed at Bradford, An electrically-driven, 835
Welding, Electrical, 997
West Hartlepool, Electricity developments in, 179
White, Memorial to Sir William, 143, 967
Wills, 187, 226, 506, 713, 884, 1,042
Winders on the Rand, Variable speed "cascade," 992
Winding diagram in the works, The, by G. Moores, 844
" diagrams, "Zig-zag," by H. MacCallum, 1,047
" gear, A novel construction in electric, 722
" in Scottish pits, Electric, 682
Windmills for generating electricity, 186
Window lighting, Effective, by "Whistlefield, 975
Wind-power for the generation of electrical energy, by W. H. Myers, 210
Wire, Pladuram, 923
Wireless Advisory Committee, A, 121
" contract, The Marconi Imperial, 161, 243
" radiations, Absorption of, 122
" school, A Glasgow, 287
" signals received at Liverpool, Effect of atmospheric conditions on the strength of, by Prof. E. W. Marchant, 693
" Society, New, 505, 882
" station, A Siberian, 59
" stations, Australian, 386
" system, Imperial, 250
" systems, Arc and spark, 631
" telegraphy, Atmospheric refraction and absorption in, by W. H. Eccles, 693
" time signals and taxation, 761
" train control, The Prentice automatic system of, 343
Woman charge engineer, Mrs. Williams, 545
Workshop flooring, by W. H. Booth, 397
Works shop order systems, by A. E. Brewerton, 1,058
World's hydro-electric resources, The, 1,039

ZIG-ZAG winding diagrams, by H. MacCallum, 1,047
Zinc, Electrometallurgy of, 408

INDEX TO PUBLISHED SPECIFICATIONS OF PATENTS.

1911.

APSEY, C. H. (29,120), 160

1912.

ABBATECOLA, L. (23,542), 320
Ackermann, P. (27,090), 320
Adams Manufacturing Co., A. H. Curtis, & A. H. Mackley (22,747), 768
Ahner, B. (25,153), 940
Aitken, W. (12,973, 12,974) (12,975), 40; (14,317), 120; (14,318), 160; (15,292), 200; (16,906), 320.
Akt.-Ges. Brown, Boveri & Cie (27,069), 728
Albrecht, M. (26,347), 560
Allen, E. A., and H. I. Allen (26,169), 240
Allgemeine Electricitäts Ges. (23,372), 440
Allison, C. A. (29,238), 80
Allwood, H., and British Insulated and Helsby Cables, Ltd. (15,706), 200
Angold, A. E., and A. H. Railing (21,411), 80
Aron Elektricitatszahlerfabrik Ges., H., and H. Gottschalk (18,809), 400
„ L. J., and C. Weiner (9,154), 200
Ashton, A. W. (17,386), 80
Asprey, L., and E. Farrow (26,194), 940
Ateliers de Constructions Electriques du Nord et de l'Est (25,207), 560
Automatic Telephone Manufacturing Co. (13,970, 13,971, 13,972, 13,973, 13,974, and 13,975), 120; (19,255), 480; (19,251, 19,252, 19,254), 520; (19,249, 19,250, 19,253), 684

BALFOUR, W. H. (16,794), 120
„ N. H., and A. B. Hitchin (19,264), 480
Barker, J., and Birmingham Metal and Munitions Co. (17,756), 120
Barlow, F. (25,258), 200
Bartschi, O. (19,963), 360
Beaver, C. J., and E. A. Claremont (22,355), 940
Becker, F. A. (27,535), 240; (12,908), 560
Beger, A. (23,824), 40
Bellamy, W., J. Dolphin, and A. Rose (17,102), 160
Belling, C. R. (19,054), 440
Bennett, W. H. (28,270), 440
Berdon, A. E. (20,225), 560
Bergius, Dr. F. (19,002), 360
Bergman, B. J. G. (14,846), 728
Berry, A. F. (23,860), 812; (23,940), 852
„ H. H., and W. J. Markham (22,118), 728
Beuttell, A. W. (16,307), 160; (22,990), 812; (23,774), 812
Bickley, E. H. (29,881), 560
Bigwood, H. M., Brotherton Tubes and Conduits Ltd., and F. H. Terry (26,953), 1,064
Birmingham Metal and Munitions Co., and J. Barker (17,756), 120
Blackstone, E. C., F. Carter, and E. Carter (29,122), 600
Blades, R. W., and British Insulated and Helsby Cables, Ltd. (29,783), 940
Blair, W., Sunderland Forge and Engineering Co., Ltd., and H. D. Wight (13,797), 80
Blathy, O. T. (29,566), 80
Blondel, A. (28,297), 440
Boardman, R. V., and F. (29,160), 40
Bolton, R. A. R., and Siemens Bros. Dynamo Works, Ltd. (27,874), 480
Bonnin, B. (15,841), 80
Booth, G. W., and J. F. Booth, and A. H. Wilkinson (23,211), 812
Bosch, R. (27,403), 40; (27,961), 120; (24,533), 560
Boult, A. J. (18,262), 400
Bowden, F. H., and E. F. M. Branson (20,293), 560
Brown, S. G. (24,043), 812
Brame, W. A., and G. P. M. Lee (16,475), 240; (13,746), 320; (26,765), 728; (23,096), 768; (26,504), 984
Branson, E. F. M., and F. H. Bowden (20,293), 560
Brettell, F. G. (14,192), 120
Bristol Wagon and Carriage Works Co., & W. A. B. Copsey (25,374), 600
British Ever-Ready Electrical Co., The, and S. Stern (29,302), 120; (19,451), 480; (19,318), 480
„ Insulated and Helsby Cables Ltd., and H. Allwood (15,706), 200
„ Insulated and Helsby Cables, Ltd., and R. W. Blades (29,783), 940
„ Thomson-Houston Co. (18,220), (18,746), 40; (10,338), 13,374), 80; (18,747), (22,262), 160; (18,372), 240; (12,060), (21,761), (26,082), 320; (25,902), 400; (18,371), (21,867), 440; (16,806), (22,664), (23,775), (27,526), 480; (20,662), (20,744), (27,433), 560; (21,263), 640; (22,449), (23,086), 684; (23,594), (28,122), 768; (20,849), (24,452), (29,842), 812; (24,058), 852; (24,255), 896; (25,370), 940; (18,300), (27,432), 984; (27,312), 1,064
British Thomson-Houston Co., E. Garton, and A. H. St. C. Watson (27,758), 896; (27,235), 984
„ Thomson-Houston Co., and F. Holden (28,227), 768
„ Thomson-Houston Co., and C. McCarthy-Jones (25,286), 940
„ Thomson-Houston Co., and A. H. St. Croix Watson (26,597), 480
„ Thomson-Houston Co., and H. W. Taylor (21,866), 320
„ Thomson-Houston Co., and F. P. Whitaker (21,762), 80; (25,704), 160
„ Thomson-Houston Co., and A. P. Young (14,378), 40
„ Westinghouse Electric and Manufacturing Co. (26,809), 440
Broadbent, F. (14,088), 80
Broadhead, J. W., and R. Dempster and Son, Ltd. (24,263), 400
Brook, P. S., and J. A. Hirst (28,635), 984
Brooks, B., and W. Holt (18,764), 120; (18,913), 440; (25,420), 640
Brotherton Tubes & Conduits, Ltd., F. H. Terry, and H. M. Bigwood (26,953), 1,064
Brown, A. C. (22,649), 768
Bruce, W. M., Junr. (24,409), 896
Bryan, A., and L. F. Mountfort (19,203), 480
Buckham, G. T., and Sir A. T. Dawson (19,585), 560
Bullock, A. R. (19,000), 480
Burbery, H. W., E. N. Hillier, and W. A. Thompson (24,596), 240
Burgstaller, Dr. S., and Dr. P. Schwarzkopf (13,282), 600
Byng, L. G., and G. Maurice (17,247), 160

CANNOCK, F. B. (22,952), 768
Carlstedt, R. (17,666), 320
Carter, F., E. Carter, and E. C. Blackstone (29,122), 600
Case, F. E. (27,837), 812
Cash, T. C., and H. Hirst (29,348), 896
Cervenka, E. (16,885), 240
Chamberlain & Hookham, Ltd., and S. H. Holden (19,118), 520
Chapman, H. F. (13,208), 40
Charles, W. J. (22,387), 80; (22,477), 560
Cheatham, R. V. (14,739), 160
Chemische Fabrik von Heyden Akt-Ges. (25,976), 896
Chessin, A. (21,610), 684
Chetwynd, L. W. P. (24,768), 896
Claremont, E. A., and C. J. Beaver (22,355), 940
Clarke, A. (15,127), 160
Clark, W. A., and H. G. Longford (20,775), 200
Clausen, H. P. (14,945), 160; (15,057), 200
Coates, F., and A. Reyrolle & Co. (18,210), 400
Collins, G. H., and H. F. (20,773), 40
„ R. V. (5,703), 80
Collings, J. H., and J. Railing (27,503), 896
Colonna, A. (18,369), 40
Compagnie Francaise pour l'Exploitation des Procedes Thomson-Houston (19,537), 80
„ Générale Radiotelegraphique (29,375), 120
Conner, M. S. (23,812), 240
„ M. S., and J. Healey (19,807), 40
„ M. S., and A. R. Kahl (24,098), 560
Cooper, W. R. (17,388), 320
Coplans, M. (19,113), 480
Copsey, W. A. B., and Bristol Wagon and Carriage Works Co. (25,374), 600
Corney, W. D. Le, and Siemens Bros. and Co. (28,646), 200
Coster, J. De (25,861), 984
Cottier, E. P., and H. L. Downes (21,971), 600
Coventry, H. G., and G. Rushton (28,979), 896
Cox, W. G. H., and Electric and Ordnance Accessories Co. (20,252), 120
Craven, P. P. (11,306), 120
Crepin, J. J. H., and M. E. M. Hagnauer (25,647), 984
Cross, E. (19,825), 560
Curtis, A. H., A. H. Mackley, and Adams Manufacturing Co. (22,747), 768

DAMEY, C. (27,276), 812
„ C., C. M. Escare, and P. F. Escare (15,456), 240
Dannenberg, E. (30,111), 560
Darker, A. H., and J. Stone & Co. (13,785), 80
Darragon, F., H. Porter, and G. Schaible (19,593), 560
Davidson, G. (26,145), 320
Davies, C. H. (18,654), 480
Davis, W. J., and C. E. Hunter (14,576), 120
Dawson, J. (23,402), 600
„ Sir A. T., and G. T. Buckham (19,585), 560
„ P., R. H. Houghton, and W. White (18,145), 400
Degenhardt, B. (26,499), 1,064
Delasson, E., and G. Michand (20,557), 240
Dempster, R., and Sons, Ltd., and J. W. Broadhead (24,263), 400
Denes, O., and L. Timar (24,647), 360
Denny, A., and F. T. Edgecombe (27,484), 684
Deri, M. (14,236), 80
Digby, T. J. (26,356), 560
Dolphin, J., A. Rose, and W. Bellamy (17,102), 160
Donisthorpe, E. S. (21,195), 600
Donovan, G. O. (14,036), 80
Doran, J. G. (20,270), 684
Downes, H. L., and E. P. Cottier (21,971), 600
Dubilier, W. (8,197), 240; (19,763), 320
Ducellier, L., and H. Guillon, 320
Duddell, W., H. W. Handcock, and A. H. Dykes (25,333), 684
Dunlop Pneumatic Tire Co., Ltd., and F. J. Keegan (17,583), 360
Dussaud, F. (5,424), 40
Dutertre, G. E., and C. Jacquel (23,748), 852
Dyer, A. H. S. (13,695), 320
Dykes, A. H., W. Duddell, and H. W. Handcock (25,333), 684

EDGECOMBE, F. T., and A. Denny (27,484), 684
Edwards, E. A. (16,318), 40
„ E. E., and J. N. Mollett (19,621), 80
Eisemann, Ernst, & Co., and E. Eisemann (29,291), 360
Electrical Conduits, Ltd., and J. R. A. Hemming (16,104), 320
„ Power Storage Co., W. H. Hanson, and H. L. Langston (22,738), 728
Electric Construction Co., and N. Pensabene (7,651), 200
„ and Ordnance Accessories Co., and W. G. H. Cox (20,252), 120
Electromoteren-Werke Hermann Gradenwitz (12,833), 40; (15,920), 160
Ellero, U. (24,758), 728
Ellison, G. (22,423), 320
„ G., and R. H. Mueller (22,959), 240
Ell, W. H., and J. Miller (28,228), 120
Emmott, R., and J. T. Pollard (25,195), 940
Entz, J. B. (25,386), 400
Escare, C. M., P. F. Escare, and C. Damey (15,456), 240
Etchells, Congdon & Muir, Ltd., and F. Muir (27,482), 728

FAIRBROTHER, H. (29,698), 896
Farber, F. (20,352), 600
Farkas, K. (14,655), 120
Farmer, G. A., E. Read, and T. Gibson (22,494), 80
Farrell, S. A., and E. Saqui (15,279), 200
Farrow, E., and L. Asprey (26,194), 940
Fergusson, J. C. (22,568), 940
Ferranti, Ltd., and J. Roothan (17,980), 360
Firth, H. W., and E. W. Leake (25,991), 360
Fischer, C. (23,869), 120
„ C. H. (23,475), 768
Flaman, N. C. E. (26,685), 320
Forrester, H. J. C. (25,313), 768
Foster, J. T., L. H. Marlor, and T. G. Hanns (23,607), 812
Fothergill, H., and C. Grahame White (16,992), 520
Freeman, E. R. (21,415), 852
Frenkel, L. (12,580), 40
Friedman, N., and I. Friedman (19,429), 520
Froger, A. P. (26,893), 984
Fuchs, L. F. (41,339), 120
Fuller, G., L. Fuller, and G. J. A. Fuller (22,053), 684
Fuss, M. (28,061), 440

GALE, J. R. C. (24,142), 812
Garton, E., A. H. St. C. Watson, and British Thomson-Houston Co. (27,758), 896; (27,235), 984
Gasiorwski, K. (26,485), 200
Gath, J. H. (23,279), 812
Gell, J. (12,847), 40
Gibson, T., G. A. Farmer, and E. Read (22,494), 80
Gill, J. H. (29,928), 200
Girardeau, E. (24,345), 40; (11,703), 480; (25,356), 896
Girvin, C. W. (22,270), 480
Godin, A. A. (29,149), 240
Goss, F. (26,502), 40
Gottschalk, F. (26,964), 684
„ H., and H. Aron Elektricitätszahlerfabrik Ges. (18,809), 400
Gourdon, J. (13,804), 80
Goy, W. (18,271), 120
Grabham, A. I. (27,509), 684
Graemiger, B. (24,541), 640
Graham, E. A. (25,911), 684
„ and Latham, Ltd., and H. R. Latham (17,539), 360
Green, H. H. R. (20,831), 600; (22,646), 728
Grimstead, W. H., and Siemens Bros. and Co., Ltd. (14,564), 120; (28,824), 120
Gritman, A. D., and W. B. Purvis (26,344), 560
Grossi, S. (21,533), 320
Grundell, A. G. (28,349), 812
Grundy, H. H. (18,017), 240
Guillon, H., and L. Ducellier (16,534), 320

HABERL, C., and W. Huttman (25,787), 120
Haddan, R. (23,597), 200; (17,749), 360; (29,999), 360; (29,372), 480
Hagnauer, M. E. M., and J. H. Crepin (25,647), 984
Hall, J. P. (10,599), 400
Hamilton, W., and Ferranti, Ltd. (26,359), 940
Hammer, L. G. (24,408), 320; (29,036), 768
Handcock, H. W., A. H. Dykes, and W. Duddell (25,333), 684
Hann, T. G., J. T. Foster, and L. H. Marlor (23,607), 812
Hanson, W. H., H. L. Langston, and Electrical Power Storage Co. (22,738), 728
Harriman, W. A., and A. Reyrolle and Co. (13,997), 120
Harrison, F., and F. L. Harrison (24,571), 400
„ H. T. (15,065), 160
„ M. E. (27,155), 684
Hartley, J. (27,473), 560
Hartmann and Braun Akt.-Ges. (19,913), 120; (21,917), 560
Hawdon, A. F. (27,351), 896
Haworth, H. F., and the Thomas Transmission, Ltd. (14,396), 120
Healey, J., and M. S. Conner (19,807), 40
Helfenstein, A. (13,577), 80
Hemming, J. R. A., and Electrical Conduits, Ltd. (16,104), 320
Hentzel, J. von (28,359), 120
Herwig, M. A. (15,927), 240
Heurtley, E. S. (13,155), 40
Hicks, J. R. (21,007), 600
Higgins, E. (22,280), 684
Hill, T. H. (22,412), 728
Hillier, E. N., W. A. Thompson, and H. W. Burbery (24,596), 240
Hiltz, G. S. (14,837), 160
Hinzpeter, A. (13,807), 120
Hirst, J. A., and P. S. Brook (28,635), 984
„ H., and T. C. Cash (29,348), 896
„ H., and G. Maurice (29,350), 940
Hitchin, A. B., and N. H. Balfour (19,264), 480
Hoadley, E. E., H. J. Railing, and J. Strachan (23,917), 360
Holden, F., and British Thomson-Houston Co., 768
„ S. H., and Chamberlain and Hookham, Ltd. (19,118), 520; (28,316), 768
Holder, G. A. (29,626), 600
Holmes, J. H. (22,985), 728
Holt, W., and B. Brooks (18,764), 120; (18,913), 440; (25,420), 640
Hoofnagle, W. T. (20,950), 640
Hoppock, M. J., Junr., and A. Stout (22,231), 40
Horton, B. D. (26,671), 320
„ J. W. (23,977), 320
Houghton, R. H., W. White, and P. Dawson (18,145), 400
Howard, A. H. (24,237), 360
„ J. W., and Siemens Bros. Dynamo Works, Ltd. (18,087), 40
Hudson, J. L. (14,385), 360
Hunt, A. H. (17,849), 80
Hunte, H. (16,126), 240
Hunter, C. E., and W. J. Davis (14,576), 120
Huttmann, W., and C. Haberl (25,787), 120

IRWIN, J. T. (27,348), 896

JACKSON, J. H. (28,929), 896
James, J. E. (19,297), 320
Jennings, H. (16,678), 560
Joel, H. F., Senr. (24,443), 896
Johnson, A. L. (14,143), 120
„ F. A. L. (23,605), 80
Joris, H. (28,816), 560
Justice, P. M. (28,479), 400

KAHL, A. R., and M. S. Conner (24,089), 560
Kast, Dr. H. (19,006), 852
Keegan, F. J., and Dunlop Pneumatic Tire Co., Ltd. (17,583), 360
Keith, A. E. (15,072), 160
Kelly, E. W., and H. C. Snook (24,046), 480
Kennedy, J. N. C. (22,131), 440
Kercher, A. J. (19,754), (19,771), 560
Kitsee, I. (14,880), 40
Klein, C. J. (19,073), 480
Knapton, W. A. (27,854), 400
Kramer, J. (23,750), 640
Krebs, L. (16,024), 200

LAGUS, R. (21,351), 320
Laidlaw, E. A., and Siemens Bros. and Co. (25,673), 940

Lake, W. E. (24,343), 120; (17,752), 320; (20,560), 400; (18,444), (20,357), 440; (19,514), 560; (25,669), 812; (24,154), 896
Lambert, W. R. (18,275), 160
Lancashire Dynamo & Motor Co., R. S. McLeod, and J. H. Wild (18,777), 320
Landis, and Gyr (22,592), 120; (22,591), 768
Lange, G. (18,479), 440
Langston, H. L., Electrical Power Storage Co., and W. H. Hanson (22,738), 728
Latham, H. R., and Graham & Latham, Ltd. (17,539), 360
Lawrence, B. (14,324), 120
Lee, G. P. M., and W. A. Brame (16,475), 240; (13,746), 320; (26,765), 728; (23,096), 768; (26,504), 984
Leiser, H. (22,041), 728
Leitner, H. (16,174), 40; (22,273), 360; (23,430), 768
Ljungstrom, F. (24,484), 240
Lodge, Sir O. J., and L. Lodge (29,268), 1,064
Loewenthal, J. (27,651), 360
Longford, H. G., and W. A. Clark (20,775), 200
Lowe, W. H. (27,634), 728
Ludwig Macho & Co. (16,900), 320
Lyons, W. J. (10,911), 80

McCALLUM, M., and W. Richardson (29,328), 684
McLean, M. A. (17,391), 40
McLeod, R. S., J. H. Wild, and Lancashire Dynamo & Motor Co., Ltd. (18,777), 320
McPherson, A. (20,464), 200
McQuade, A. K. (23,639), 768
Mackley, A. H., Adams Manufacturing Co., and A. H. Curtis (22,747), 768
Major, C. G., and Smith, Major, and Stevens, Ltd. (26,935), 896; (29,778), 984
Malcolm, J. A. (10,542), 40
Marino, P. (20,180), 560
" Q. (12,642), 560
Markham, W. J., and H. H. Berry (22,118), 728
Marks, E. C. R. (18,109), 40; (23,150), 160; (15,961), 200; (15,958), 440; (12,592), 520
" F. C. R. (22,258), 684
Marlor, L. H., T. G. Hann, and J. T. Foster (23,607), 812
Marr, A. (21,664), 640; (23,240), 768
Martin, J. (21,641), 684
Maschinenbau- Anstalt Humboldt (9,147), 120; (24,643), 200
Mascord, G. W. (19,661), 560
Maurice, G., and L. G. Byng (17,247), 160
" G., and H. Hirst (29,350), 940
Mayer, L. H. (29,569), 40
McBerty, F. R. (25,174), 684
Meckel, A. (13,615), 80
Michaud, G., and E. Delasson (20,557), 240
Miller, J., and W. H. Ell (28,228), 120
" H. P. E., and E. Tetlow (24,238), 896
Miram, K. (27,922), 200
Moller, E. (17,840), 360
" E. C. (27,530), 640
Mollett, J. N., and E. E. Edwards (19,621), 80
Moretti, R. (16,164), 320
Morgan, D. J. (13,463), 240
" Crucible Co., and C. W. Spiers (24,626), 684
Morisot, E. (29,176), 1,064
Morrison, W. (21,612), 684
Mort, J. E., and E. Warren (22,696), 400
Mountfort, L. F., and A. Bryan (19,203), 480
Moyes, J., and C. A. Stevenson (13,910), 40
Mueller, R. H., and G. Ellison (22,959), 240
Muir, F., and Etchells, Congdon and Muir (27,482), 728
" J. M., and A. J. W. Munden (14,225), 40
Muller, A. R. (27,738), 560
Munden, A. J. W., and J. M. Muir (14,225), 40
Murray, J., and I. T. Nelson (27,911), 940

NASH, H. R. (23,451), 768
Nathan, J. (24,131), 600
Nehmer, F. (18,799), 240
Nelson, I. T., and J. Murray (27,911), 940
Neuburger, H. (23,887), 852
Nicholson, A. M. (24,136), 812
Noble, A. G. (25,487), 728
Nodon, A. L. C., 240
North, G. (16,730), 200

O'FLAHERTY, D. H. (25,591), 812
Oldham, O. (24,438), 600
Olsen, O. R., and S. K. Thoresen (24,691), 728
Ormrod, J. H., W. J. Purdue, and A. E. Otway (23,520), 440
O'Toole, J. J. (29,735), 320
Otway, A. E., J. H. Ormrod, and W. J. Purdue (23,520), 440

PAKENHAM, W. L. (24,361), 200
Palmer, F. (23,344), 600
Parker, W. J. (21,115), 440; (21,274), 560
Parkes, F. (20,805), 640
Pasqualine, L. (13,680), 40
Paxton, A. (14,547), 320
Pehrsson, C. E. (18,482), 400
Pensabene, N., and Electric Construction Co. (7,651), 200
Petithory, E. A., and Siemens Bros. and Co., Ltd. (25,237), 896
Pickard, T. B. (29,736), 40
Pinkerton, C. B., and A. E. Wason (21,974), 896
Pinney, H. A., and A. H. Taylor (19,921), 560
Pintsch, Akt-Ges., Julius (15,485), 160; (15,486), 200; (23,854), 812
Piper, H. J., and R. A. Bridgwater (19,064), 440
Plaisant, G. (26,177), 896
Plecher, A. (13,157), 240
Plohl, M. (18,893), 400
Pollak, A. (16,782), 480
" J. E. (20,446), 320
Pollard, J. T., and R. Emmott (25,195), 940
Pope's Electric Lamp Co. (22,543), 768
Porak, I. (16,671), 160
Porter, H., G. Schaible, and F. Darragon (19,593), 560
Poulton, G. (22,209), 600
Prentice, H. B., and H. Atlay (23,014), 768
Price, S. L. (19,345), 728
" W. A. (22,524), 768
Prim, A. W., and F. W. Roper (16,317), 240
Purdue, W. J., A. E. Otway, and J. H. Ormrod (23,520), 440
Purvis, W. B., and A. D. Gritman (26,344), 560

QUAIN, J. R. (22,854), 768; (26,548), 1,064

RAILING, A. H., and A. E. Angold (21,411), 80
" M. J., and J. H. Collings (27,503), 896
" A. H., and C. C. Garrard (21,120), 320
" H. J., J. Strachan, and E. E. Hoadley (23,917), 360
Read, E., T. Gibson, and G. A. Farmer (22,494), 80
Renouf, E. de F. (29,453), 812
Reyrolle, A., & Co., and F. Coates (18,210), 400
" A., & Co., and W. A. Harriman (13,997), 120
Richardson, S. T. (20,580), 320
" W., and M. McCallum (29,328), 684
Riley, A. J. (23,404), 480
Roberts, A. E., and P. S. Turner (30,060), 440
Robin, J. T. (26,186), 984
Robinson, R., and A. Turpin (25,499), 896
Rolfe, A. (14,056), 640
Roothaan, J., and Ferranti, Ltd. (17,980), 360
Roper, F. W., and A. W. Prim (16,317), 240
Rose, A., W. Bellamy, and J. Dolphin (17,102), 160
Rosenberg, P. (28,772), 984
Rothwell, J. H., and W. Thomson (14,202), 120
Routin, J. L. (24,751), 360
Rouzet, L. (12,687), 560
Rushton, G., and H. G. Coventry (28,979), 896

ST. Croix Watson, A. H., and British Thomson-Houston Co. (26,597), 480
Samaia, D. (9,637), 160
Saqui, E., and S. A. Farrell (15,279), 200
Sarel, C. (26,639), 896
Schaible, G., F. Darragon, and H. Porter (19,593), 560
Schofield, L. (21,209), 1,064
Scholes, W. (13,401), 80
Scholler, L. (24,954), 120
Schreiber, H. P., and H. B. Van Daalen (17,306), 360
Schuler, L. (18,184), 320
Schwarzkopf, Dr. P., and Dr. S. Burgstaller (13,282), 600
Scott, E. K. (14,871), 360
Seropian, S. B. (26,603), 1,064
Severy, M. L., and G. B. Sinclair (19,870), 480; (19,869), 560; (19,868), 728
Sheen, S., and W. W. Timewell (20,295), 600
Shepherd, W. H., and A. E. McKechnie (11,479), 440
Sibley, J. T. (18,422), 440
Siemens Bros. & Co. (28,645), 80
" Bros. & Co., and W. H. Grinsted (14,564), (28,824), 120
" Bros. & Co., and E. A. Laidlaw (25,673), 940
" Bros. & Co., and W. D. Le Corney (28,646), 200
" Bros. & Co., and E. A. Petithory (25,237), 896
" Bros. Dynamo Works (18,013), 360
" Bros. Dynamo Works, and R. A. R. Belton (27,874), 480
Siemens Bros. Dynamo Works, and J. W. Howard (18,087), 40
" Bros. Dynamo Works, and E. O. Kieffer (21,822), 684
" and Halske Akt-Ges. (23,050), 120; (28,751), (29,891), 320; (18,498), 640
" -Schuckertwerke Ges. (25,238), (25,831), 320; (26,439), 560
" Schuckertwerke G. m. b. H. (28,483), 80
Simms, F. R., and Simms Magneto Co. (9,924), 360
Simplex Conduits, Ltd., and F. G. Taylor (24,586), 896
" Conduits, Ltd., and L. M. Waterhouse (15,275), 80
Sinclair, G. B., and M. L. Severy (19,870), 480
Smith, C. (24,960), 768
" C. C. (26,651), 360
" H. (29,311), 600
" Major & Stevens, Ltd., and C. G. Major (26,935), 896
Smits, J. M. (21,832), 440
Snook, H. C., and E. W. Kelby (24,046), 480
Sokoll, W. (15,216), 80; (15,404), 160
Somerville, J. M., and South Metropolitan Gas Co. (26,156), 896
South Metropolitan Gas Co., and J. M. Somerville (26,156), 896
Spiers, C. W., and Morgan Crucible Co. (24,626), 684
Statter, J. G. (25,606), 600
Staunton, R. C. (28,469), 896
Sterling Telephone & Electric Co. (22,450), 160
" Telephone & Electric Co., and F. G. Bell (24,439), 896
Stern, G. B. (21,725), 160
" S., and the British Ever-Ready Electrical Co. (29,302), 120; (19,451), 480; (19,318), 480
Stevenson, C. A., and J. Moyes (13,910), 40
Stockdale, R. H. (15,548), 200
Stone & Co., J., and A. H. Darker (13,785), 80
Stout, A., and M. J. Hoppock, Junr. (22,231), 40
Strachan, J., E. E. Hoadley, and H. J. Railing (23,917), 360
Stubling, A. C. (28,846), 320
Sunderland Forge and Engineering Co., Ltd., H. D. Wright, and W. Blair (13,797), 80
Suter, F. W. (25,536), 600

TAYLOR, A. M. (16,830), 120
" A. H., and H. A. Pinney (19,921), 560
" F. G., and Simplex Conduits, Ltd., (24,586), 896
" J. D. (26,351), 360
Terry, F. H., H. M. Bigwood, and Brotherton Tubes & Conduits, Ltd. (26,953), 1,064
Tetlow, L. J. (16,549), 480
" E., and H. P. E. Miller (24,238), 896
Thomas, G. E. (26,396), 728
" J. G. P., and Thomas Transmission, Ltd., (17,130), 360; (24,618), 896
" Transmission, Ltd., and H. F. Haworth (14,396), 120
Thommel, G. (24,165), 812
Thompson, W. P. (26,323), 560
" W. A., H. W. Burbery, and E. N. Hillier (24,596), 240
Thomson, W., and J. H. Rothwell (14,202), 120
Thoresen, S. K., and O. R. Olsen (24,691), 728
Timar, L., and O. Denes (24,647), 360
Timewell, W. W., and S. Sheen (20,295), 600
Tirrill, A. A. (22,419), 440
Truss, H. F. J. (23,453), 200
Tucker, J. H. (19,642), 360
Tullett, A. H. (20,671), 400
Turner, H. S. (22,807), 120
" P. S., and A. E. Roberts (30,060), 440
Turpin, A., and R. Robinson (25,499), 896

VAN Daalen, H. B., and H. P. Schreiber (17,306), 360
Vandervell, C. A., and A. H. Midgeley (17,838), 80
Vassberg, G. A. (24,550), 896
Venner, R. F. (12,569), 40; (23,082), 768

WAFFEN-Technische-Ges. "Wespi" (14,269), 120
Wall, G., and Ferranti, Ltd. (22,339), 684
Wallace, R. W., and E. Wassmer (18,449), 984; (18,450), 984
Ward, C. W. (22,833), 768
Warren, E., and J. E. Mort (22,696), 400
Wason, A. E., and C. B. Pinkerton (21,974), 896
Wassmer, E., and R. W. Wallace (18,449), 984; (18,450), 984
Waterhouse, L. M., and Simplex Conduits, Ltd. (15,275), 80
Watson, A. H. St. C., British Thomson-Houston Co., and E. Garton (27,758), 896; (27,235), 984
Welsh, A. (24,522), 768
Western Electric Co. (17,858), 160; (15,952), 240; (25,382), 940
Westinghouse Metallfaden Gluhampenfabrik Ges. (26,288), 160
Whish, A. C. (23,429), 1,064
White, C. Grahame, and H. Fothergill (16,993), 520
" W., P. Dawson, and R. H. Houghton (18,145), 400
Whyte, W. D. (25,023), 40
Wiener, C., and L. J. Aron (9,154), 200
Wight, H. D., W. Blair, and Sunderland Forge and Engineering Co., Ltd. (13,797), 80
Wild, J. H., Lancashire Dynamo and Motor Co., Ltd., and R. S. McLeod (19,777), 320
Wilkie, J. (18,060), 160
Wilkinson, F. A. (24,953), 940
" G. (19,543), 940
" A. H., G. W. Booth, and J. F. Booth (23,211), 812
Williams, S. D. (28,042), 440
Wilson, D. H. (26,752), 1,064
Winterhalder, R. (19,164), 80
Wortmann, W. (20,185), 560
Wyche, E. M. (29,597), 1,064

YOUNG, P. (22,852), 728
" A. P., and British Thomson-Houston Co., Ltd. (14,378), 40

ZIVNOSTENSKA Banka v. Prazе (16,374), 120

1913.

ACHENBACH, J. A. E. (832), 728
Akt-Ges. Brown, Boveri et Cie (6,036), 940
" für Anilin Fabrikation (13,901), 600
Aktiebolaget L. M. Ericsson & Co. (11,658), 520
Allard, A. J. (6,185), 600
Allcock, W., and Sterling Telephone and Electric Co. (15,566), 1,064
Allgemeine Elektricitäts Ges. (3,680), 280; (14,048), 440; (6,934), 520; (14,433), 520; (7,896), 728; (16,391), 940
Ambrose Shardlow & Co., and W. H. Moore (3,487), 984
Anderegg, G. A., and O. B. Blackwell (2,508), 200
Anderson, V. (2,507), 440
Andrews, D. H., and E. C. Ketchum (17,725), 1,064
Angus, A. R. (6,330 and 6,652), 200
Aron Elektricitatszahlerfabrik Ges. (11,277), 360; (16,753), 940
Arpin, C. (10,403), 940
Ash, B. F. (19,496), 940
" Claudius & Sons & Co., Ltd., A. B. Jones, and W. G. Lee (2,697), 200

BAKER, T. T., and G. E. Heyl (3,057), 940
Bally, J. (16,011), 768
Balsillie, J. G. (15,674), 940
Banes, A., and J. Weiss (1,285), 120
Baudisch, J. (17,563), 728
Becker F. A. (19,029), 560
Beckmann, E. (130), 200
Bergmann Elektricitäts Werke Akt-Ges. (5,317), 280; (2,778), 320
Betulander, G. A. (4,792), (6,465), 684
Biquard, R., H. Cheron, and H. Dominici (13,822), 940
Blackwell, O. B., and G. A. Anderegg (2,508), 200
Blake, F. R. (4,381), 280
Block, L. (411), 80; (2,215), 600
Bloxham, A. G. (6,551), 940; (16,709), 1,024
Booth, E., and N. R. Booth (1,002), 600
Bosch, R. (4,692), 320; (9,264), 1,064
Bourne, C. W. D., F. Whipp, and S. Whipp (2,233), 280
Boutard, H. C. E. (5,546), 640
Bowden, J. H., and H. F. J. Thompson (1,496), 200
Boyd, W. B., and J. B. Tannahill (19,551), 1,024
Brimsdown Lamp Works, Ltd., and G. Ludecke (6,952), 320
British L. M. Ericsson Manufacturing Co., and A. G. Rogers (5,626), 684
" Thomson-Houston Co. (148), 560; (9,985), 684; (4,945), 896; (5,961), 984
" Thomson-Houston Co. and E. B. Wedmore (6,807), 560
Brolt, Ltd., Brooks, and W. Holt (15,585), 940
Brooks, W. Holt, and Brolt, Ltd. (15,585), 940
Brown, A. W. (178), 80
Brunko, F. (7,275), 280
Bruns, B (18,526), 940
Bukh, J. M. (5,309), 896
Burge, H., and Crompton & Co. (3,227), 600
Burton, W., and L. J. Yates (6,434), 896

CAHUCITWERKE Nürenberg (14,870), 940
Cerebotani, L. (9,833), 360
Chabeault, E. (1,444), 360

Chapman, W. C. S. (7,575), 360
Charles, W. J. (16,151), 768
Cheron, H., H. Dominici, and R. Biquard (13,822), 940
Chetwynd, L. W. P., and Dent & Co., and Johnson, Ltd. (6,702), 560
Chiger, S. (10,559), 728
Chubb, L. W. (2,146), 320
Clark, E. J., and Hart Accumulator Co. (2,908), 280
Clemens, J. G., and Monarch Refillable Fuse Co. (3,573), 520; (3,574), 560
Clerk, H. E., and W. H. Gwynn (10,153), 896
Close, J. (2,546), 560
Compagnie Francaise pour l'Exploitation des Procedes Thomson-Houston (5,020), 80
" pour la Fabrication des Compteurs et Materiel d'Usines a Gaz and Brocq (8,601), 280
" pour le Traitement des Metaux et des Minerais par Electricité (12,444), 940
Conner, M. S. (3,987), 1,064
Conrad, F. (12,471), 896
Cooke, H. S., and F. Westwood (13,140), 280
Cortez-Leigh, F. A., and G. Broughall (7,996), 440
Creighton, E. E. F. (5,662), 768
Crompton & Co., and H. Burge (3,227), 600
" and Co., and C. Crompton (237), 40
Cunnington, J. H. (7,755), 560

DECKER, O. (8,878), 440
Declere, J. J., A. L. E. Gresy, and G. Pascalis (13,109), 768
Dekker, N. H. M. (7,328), 360
Despessailles, F. (11,850), 896
Displayer Co., and T. C. Walter (12,218), 560
Dodson, L., and C. G. Nobbs (8,584), 984
Dominici, H., R. Biquard, and H. Cheron (13,822), 940
Dos Santos, M. C. (11,243), 940
Doughty, J. M. (10,422), 812
Dubilier, W. (16,917), 520
Du Bois, H. M. (1,420), 360; (1,439), 360
Duddell, W., H. W. Handcock, and A. H. Dykes (1,395), 400; (6,772), 520
Dunne, P. (10,900), 1,064
Dykes, A. H., W. Duddell, and H. W. Handcock (1,395), 400; (6,772), 520

EARL, H. D. (9,278), 984
Eckmann, S. (9,174), 280
Eichert, F. (17,922), 940
Electric and Ordnance Accessories Co. and E. Howell (5,836), 896
Elektrizitatswerk Lonza Akt., Ges. (3,575), 40
Electromechanische Industrie Ges. (5,646), 120
Electromotor Equipment Co., and A. J. Barlow (11,069), 940
Electrotechnische Fabrik Schaffer & Co. (12,813), 940
Ellison, G. (12,710), 896
" G. and M. H. R. Mueller (12,882), 768
Elster, J. (4,847), 440; (3,466), 560
Engle, G. S. (3,861), 280
Evans, H. and St. Helens Cable and Rubber Co. (6,242), 560
" U. R. and E. K., Rideal (1,776), 984

FAIRBURN, C. E., Siemens Bros. Dynamo Works, and F. Lydall (15,149), 940
Ferguson, A. and J. A. Gardener (13,793), 940
Ferranti, Ltd., and R. Weaving (12,935), 560
Forster, H. (10,085), 280
Fowler, J. V. (3,266), 896
Franklin, C. S., and Marconi's Wireless Telegraph Co. (4,514), 984
Franz, R. (15,502), 520
Freitag, E. (14,306), 1,024
Fried., Krupp, Akt.-Ges. (1,407), 640; (17,925), 1,264

GALLOWAY, C. D., Junr. (2,402), 684
Gambrell, T. E. (4,862), 896
Gardener, J. A., and A. Ferguson (13,793), 940
Garretson, E. (7,288), 280
Geb. Siemens & Co. (7,232), 520; (7,108), 768
Ges. für Chemische Industrie in Basel (11,872), 640
" für Elektro-Osmose and G. B. Schwerin (10,873), 280
Giles, G. (15,951), 940; (6,359), 1,064
Goodwin, A., and C. A. Vandervell (14,942), 940
Gordon, W. W., and J. Wright (13,694), 560
Gorton, W. E. (608), 280
Graeger, A. C., and M. Heinig (4,957), 560
Graham, E. A. (4,197), 200; (2,022), 812
" B. A., and W. J. Rickets (2,610), 360; (1,049), 560
Grant, R. W., and Knowles Oxygen Co. (1,812), 940
Grasme, F. C. (4,665), 120
Gresy, A. L. E., G. Pascalis, and J. J. Declere (13,109), 768
Grigsby, B. J. (3,014), 684
Grissinger, E. (2,930), 280
Gruneberg, F. (6,156), 440
Guiterman, K. S. (8,352), 600
Gwynn, W. H., and H. E. Clerk (10,153), 896

HANCQ, J. (7,570), 440
Handcock, H. W., A. H. Dykes, and W. Duddell (1,395), 400; (6,772), 520
Hansen, F., and W. F. Mohr (3,525), 120
Harden, T., and Metal Jointing Co. (9,752), 984
Hart Accumulator Co., and E. J. Clark (2,908), 280
Hartmann and Braun Akt.-Ges. (6,570), 440; (8,602), 560
Haskell, C. O. (8,395), 280
Heaton, T. (4,707), 728
Hedlund, M. (16,262), 940
Heinig, M., and A. C. Graeger (4,957), 560
Helbronner, A., V. Henri, and M. von Recklinghausen (13,490), 940
Helfenstein, A. (2,577), 1,064
" Elektro-Ofen-Ges. (9,590), 1,064
Henderson, J. C. A. (1,156), 640
Henri, V., M. von Recklinghausen, and A. Helbronner (13,490), 940
Heinze, J. O. (10,894), 684
Herrmann, C. B. (8,198), 280
Heyl, G. E., and T. T. Baker (3,057), 940
Hill, R. N. (2,612), 728
Hirst, H., and J. Strachan (2,636), 728
Hitzelberger, G. F., and New British Everready Co. (13,175), 1,024
Hodgson, F. (6,901), 984
Holland, F. (15,116), 1,064
Holt, W., Brolt, Ltd., and Brooks (15,585), 940
Horne, W. C. (764), 812
Hovland, A. N. (10,472), 728
Howell, E., and Electric and Ordnance Accessories Co. (5,836), 896
Howorth, F. W. (9,070), 896
Hubbell, H. (3,656), 896
Huntington, P. (2,449), 812

JAKOBSEN, J. P., and H. F. Jensen (14,330), 940
Jensen, H. O. A. (6,292), 440
" H. F., and J. P. Jakobsen (14,330), 940
Joel, Senr., H. F. (2,269), 896
Johnson, Ltd., and L. W. P. Chetwynd, and Dent & Co. (6,702), 560
" G. W. (1,933), 520
" J. Y. (14,711), 1,024
" and Phillips, Ltd., and A. E. Spencer (5,173), 1,064
Jones, A. B., W. G. Lee, and Claudius Ash & Sons & Co., Ltd. (2,697), 200

KELLER-DORIAN, A. (1,100), 360
Kelvin and James White, Ltd., and M. B. Field (9,732), 320
Kessels, E. J. (3,582), 280
Ketchum, E. C., and D. H. Andrews (17,725), 1,064
Kieffer, E. O., W. Parker, and Siemens Bros. Dynamo Works, Ltd. (3,224), 120
Kitchell, W. C. (13,241), 940
Kitsee, I. (10,519), 200
Knowles Oxygen Co. and R. W. Grant (1,812), 940
Kraus, J. (14,587), 940
" J., and E. Oppen (6,336), 896
Krupp Akt.-Ges. Grusonwerk, Fried. (4,595), 360; (3,825), 440

LAKE, S. (26), 80
Lee, W. G., Claudius Ash & Sons & Co., Ltd., and A. B. Jones (2,697), 200
Leek, W. H., and A. J. Wilesmith (4,239), 896
Leitner, H. (21,751), 940
Lilienfeld, J. E. (1,843), 280
Loewenstein, F. (3,387), 560
Loudon, G. A. (4,256), 320
Ludecke, G., and Brimsdown Lamp Works, Ltd. (6,952), 320
Luders, A. (5,228), 812
Lydall, F., C. E. Fairburn and Siemens Bros. Dynamo Works (15,149), 940

MCNAB, A. (9,695), 640
"Mafam" Motor Apparate Ges. (1,093), 728
Magnet-Werk Ges. Eisenach (13,911), 320
-Werk Ges. Eisenach Spezialfabrik für Elektromagnet-Apparate (22,706), 940
Majorana, F. (10,154), 440; (10,153), 896
Malaby, I. B. (15,180), 1,024
Malone, J. F. J. (17,112), 684
Manchester, A. P., and H. M. Spooner (2,893), 984
Mann, J. (4,479), 560
Marconi's Wireless Telegraph Co., and C. S. Franklin (4,514), 984
Marks, E. C. R. (5,082), 560; (5,285), 768; (12,208), 812; (11,430), 1,064
Marsh, J. G. (4,816), 560
Martin, L. and G. Nixey (3,562), 768; (5,637), 812
Martyn, S. W. (79), 1,064
Marx, N. (4,502), 812
Mascall, A., and Chamberlain & Hookham, Ltd. (16,344), 1,024
Maschinenfabrik Oerlikon (14,633), 728
Mason, C. T. (4,670), 80
Maurice, G., and M. J. Railing (1,286), 1,064
McBerty, F. R. (19,421), 940
McCormick, L. (7,007), 280
McDougall, W. M. (770), 440
Menzel, A., and B. Pordes (6,673), 80
Metal Jointing Co. and T. Harden (9,752), 984
Michie, A. C., and Sir R. A. S. Paget (3,864), 1,064
Mildey, F. M. (1,471), 1,064
Milhado, A. (2,192), 280
Mohr, W. F., and F. Hansen (3,525), 120
Monarch Refillable Fuse Co., and J. G. Clemens (3,573), 520; (3,574), 560
Moore, W. H., and Ambrose Shardlow & Co. (3,487), 984
Moretti, R. (13,918), 280
Moul, H. E. (11,704), 360
Mueller, M. H. R., and G. Ellison (12,882), 768

NAAMLOOZE Vennootschap Philip Metal Glocilampenfabriek (1,340), 940
Nathorst, H. J. H. (8,485), 812
Nelson, R. (11,166), 896
New British Everready Co. and G. F. Hitzelberger (13,175), 1,024
Nixey, G., and L. Martin (3,562), 768; (5,637), 812
Nobbs, C. G., and L. Dodson (8,584), 984

OKUN, M. S. (2,125), 896
Olmsted, A. H. (1,207), 896
Oppen, E., and J. Kraus (6,336), 896
Orinschnig, A. (18,755), 940
Otis Elevator Co. (13,315), 940

PAGET, Sir R. A. S., and A. C. Michie (2,864), 1064
Parker, W., Siemens Bros. Dynamo Works, Ltd., and E. O. Kieffer (3,224), 120
Pascalis, G., J. J. Declere, and A. L. E. Gresy (13,109), 768
Pearce, S. L., and A. Wilkinson (6,965), 1064
Pehrsson, C. E. (16,979), 440
Pelli, R. (10,087), 940
Perfect, R. C. (1,984), 940
Perreur-Lloyd, M. (6,897), 896
Petithory, E. A., and Siemens Bros. & Co., Ltd. (2,752), 200
Pettigrew, T., and Siemens Bros. & Co. (7,128), 812; (818), 984
Pordes, B., and A. Menzel (6,673), 80
Pucel, A. L. (3,335), 1064

RAILWAY, M. J., and G. Maurice (1,286), 1064
Rappenecker, A. (19,939), 1064
Raves, E. A. (14,562), 600; (7,469), 684
Record, J. W. (763), 728
Reid, F. T. (1,243), 560
Rhodus, T. (4,131), 812
Riboisiere, J. F. P. de la (15,648), 940
Richards, W. E. W. (223), 440
Rickets, W. J., and E. A. Graham (2,610), 360; (1,049), 560
Rideal, E. K., and U. R. Evans (1,776), 984
Rippingille, F. S., and F. L. Broughton (7,931), 768
Rodakowski, E. de, and United Motor Industries, Ltd. (7,477), 280
Rogers, A. G., and British L. M. Ericsson Manufacturing Co. (5,626), 684
" -Jenkins, A. (9,869), 560
Roubal, J. (10,210), 440
Routin, J. L. (735), 768; (13,084), 940
Royer, H. (7,302), 728
Roze des Ordons, R. L. (6,192), 1064
Ruthardt, W. (12,871), 896
Ruthenburg, M. (47), 684
Ruyssenaers, Sir A. W. (6,544), 812

ST. HELENS Cable and Rubber Co., and H. Evans (5,242), 560
Sameli, H. (1,562), 400
Saunders, D. G., Junr. (3,931), 440
Schaller, O. (1,804), 640
Schanz, F. A. (12,549), 896
Schneidrzik, J. (13,145), 684
Schott and Gen. (17,759), 560; (10,512), 768
Schou, C. (5,040), 440; (13,089), 560
Schuchardt, A. (7,243), 560; (8,467), 600
Schulz, J. (8,738), 560
Schwerin, G. B., and Ges. für Elektro-Osmose (10,873), 280
Severy, M. L., and G. B. Sinclair (16,860), 560
Shaw, W. E. (8,024), 320
Shreene, H. E. (4,611), 600
Siemens Bros. & Co. (8,027), 280; (1,277), 400; (9,169), 1064
" Bros. & Co. and E. A. Laidlaw (9,167), 812
" Bros. & Co. and E. A. Petithory (2,752), 200
" Bros. & Co. and T. Pettigrew (7,128), 812; (818), 984
" Bros. Dynamo Works (6,647), 440; (6,648), 560; (12,575), 896; (13,435), 940
" Bros. Dynamo Works, E. O. Kieffer and W. Parker (3,224), 120
" Bros. Dynamo Works, F. Lydall and C. E. Fairburn (15,149), 940
" Bros. Dynamo Works and G. H. Taylor (16,526), 940
" and Halske Akt.-Ges. (14,214), 320; (7,846), 360; (15,164), 600; (8,240), 640; (9,168), 640; (12,565), 640; (7,531), 728; (7,530), 768; (7,180), 812; (3,132), 896; (3,439), 896; (17,879), 940; (9,169), 1064; (19,928), 1064
" -Schuckertwerke Ges. (1,596), 200; (17,086), 560; (11,007), (14,390), (16,454), 640; (687), 728; (6,164), 812 (2,136), 200; (5,903), 280
" -Schuckertwerke G. m. b. H. (2,136), 200; (5,903), 280
Signal Ges. (1,995), 40; (3,853), 280; (3,248), 560; (13,919), 768
Sinclair, G. B., and M. L. Severy (16,860), 560
Smith, J. P., 534
Soc. Anon. des Forges et Acieries de Huta Bankowa (10,901), 940
" l'Eclairage Electrique (3,759), 560
" Générale des Huiles et Fournitures Industrielles l'Oleo (18,753), 940
" Générale des Nitrures (12,837), 940
" Internationale de Lumiere Froide (20,288), 940
" Vedovelli, Priestley et Cie (11,310), 940
Spencer, A. E., and Johnson and Phillips, Ltd. (5,173), 1064
Spooner, H. M., and A. P. Manchester (2,693), 984
Sterling Telephone and Electric Co. and W. Allcock (15,566), 1064
Stern, S., and British Ever-Ready Electrical Co. (10,597), 520
Stevens, J. (11,218), 560
Steynis, J. (3,769), 640
Stille, C. (9,061), 280; (9,644), 320
Sullivan, J. A. (11,972), 640
Sydenham, C. S. (4,965), 940

TANNAHILL, J. B., and W. B. Boyd (19,551), 1024
Tattersall, T. W. (1,206), 40
Telephon Apparat Fabrik E. Zwietusch & Co. (2,700), 440
Thomas, J. G. P., and Thomas Transmission, Ltd. (12,841), 320
Thompson, W. P. (5,481), 40; (8,821), 728
" H. F. J., and J. H. Bowden (1,496), 200
Thomson, J. C. (9,632), 940
Tietgen, H. (20,822), 1064

UDE, W. C. (10,556), 1064
United Motor Industries, Ltd., and E. de Rodakowski (7,477), 280

VANDERVELL, C. A., and A. Goodwin (14,942), 940
Van Kerckhoven, E. O. (1,512), 560
Vedovelli, Priestley, et Cie (4,090), 812
Voigt and Haeffner Akt.-Ges. (8,409), 768
Von Recklinghausen, M., A. Helbronner, and V. Henri (13,490), 940

WADE, H. (7,581), 360
Wagner, H. A. (16,048), 940
Walter, T. C., and Displayer Co. 12,218), 560
Warren, C. S. (11,198), 640
" J. B. (3,591), 768
Watkins, A. E. (2,238), 520
Weaving, R., and Ferranti, Ltd. (12,935), 560
Weiss, O. (3,732), 40
Weisberg, E. (11,298), 1024
Western Electric Co. (12,423), (12,424), (12,425), (12,426), 280; (10,164), 520; (6,767), (6,768), (19,124), 940
Westinghouse Metallfaden Gluhlampenfabrik Ges. (3,162), 520
Westwood, F., and H. S. Cooke (13,140), 280
Whipp, S., C. W. D. Bourne and F. Whipp (2,233), 280
White, W. D. (6,112), 600
Wielgolaski, F. H. A. (2,214), 768
Wilesmith, A. J., and W. H. Leek (4,239), 896
Wilkinson, A., and S. L. Pearce (6,965), 1064
Wolf, P. (6,700), 1064
Wolfram Lampen Akt.-Ges. (12,753), 000
Worrall, H. T. (2,139), 360

YATES, L. J., and W. Burnet (6,434), 896
Young, G. D. (5,321), 812

Printed by WM. CATE, LTD., 147-150, Gt. Saffron Hill, Charterhouse Street, E.C., and Published by the Proprietors, H. ALABASTER, GATEHOUSE & Co., 4, Ludgate Hill, London

(8,027), 280;
9,169), 1064
E. A. Laid-
12
E. A. Pett-
000
T. Pettigrew
18), 984
Works (6,647),
60; (12,575),
40
Works, E. O.
W. Parker
Works, F.
E. Fairburn
Works and
16,526), 940
Ges. (14,214),
30; (15,164),
40; (9,168),
340; (7,531),
68; (7,130),
96; (3,432),
940; (9,169),
064
Ges. (1,596),
50; (11,007),
640; (687),
03), 280
G. m. b. H.
003), 280
3,853), 280;
768
L. Severy
Acieries de
901), 940
e (3,759),
et Fourni-
s l'Oleo
s (12,837),
niere Froide
Cie (11,310),
and Phil-
4
P. Man-
ectric Co.
66), 1064
Ever-Ready
520
), 320
)
d W. B.
Zwietusch
as Trans-
320
); (8,821),
H. Bow-
, and E.
280
and A.
12), 560
,090), 812
(8,409),
Helbron-
490), 940
ver Co.
i, Ltd.
(12,424),
(10,164),
124), 940
lampen-
Cooke
and F.
768
Leek
Pearce
12,753),
Burton
ondon